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NEWS SUMMARY

THE DESIGNS submitted in the competition for the Enfield Civic Centre are critically analysed by James Melvin, FRIBA. p. 1037

IN THE FIRST ten months of 1957, 250,711 *houses were completed compared with* 245,561 *in the same period of last year.* p. 1046

ONE OF THE LARGEST district heating schemes in the country is being developed by the MoW at South Kensington. p. 1048

PARLIAMENT was given details of the increased hospital building programme for the next three years. p. 1051

A HIGH COURT judge has ruled that the LCC are not liable to pay to contractors additional costs incurred by the rise in the contractors' contributions to holidays-with-pay. p. 1053

A GREATLY IMPROVED type of ball-valve for domestic cisterns, evolved after three years work at the BRS, is now in limited production. p. 1061

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THE BUILDER

Incorporating ARCHITECTURE & THE BRITISH ARCHITECT

Vol. CXCIII December 13 1957 No. 5985

COSTS AND MANAGEMENT

EIGHT months ago we congratulated the Royal Institution of Chartered Surveyors on the speed and courage they had shown in producing an exhibition on the problems of cost control in building, and as a conclusion the question was asked 'What are the builders doing about it?' It is, therefore, with pleasure that elsewhere in this issue details are given of a top-level management course and conference which was organised by the London Master Builders Association and attended by eight representatives each from that organisation and from the RIBA and the RICS.

But what, it may be asked, has a management conference to do with the control of building costs? Management is a matter for 'the boss,' but who is 'the boss' in the building industry? Various speakers during the conference, both from the platform and from the floor, made it plain that no matter who was boss, the man who paid the piper called the tune. The further point was made that the piper, as far as the building industry is concerned, is the nation at large, and that the nation at large might not be able to afford the tune at all unless the industry learnt a new score.

Perhaps the analogy of an orchestra is not a bad one. The conductor of any particular work may himself have come from any of the instrumentalists of the orchestra, but unless he has learnt to balance properly the instruments at his call, a cacophony of sound can emerge that is far removed from the melodious symphony the composer's score intended. That management was not removed from problems of cost control was obviously appreciated by the conference members, who included amongst others, the Chairmen of the RIBA and the AA's Cost Research Committees and the RICS Cost Research Panel.

The problem of cost control is, in fact, essentially a management problem in all industries, not least in the building industry, where the integration of the various management problems between the various parties may be the key.

That an outsider sees most of the game is a much quoted maxim, but there can be no doubt that the way ahead was most clearly pointed during the conference by the scientist and work-study experts who started unfettered, as it were, from any partisan interest or preconceptions. We hope that this forthright lead by the builders will be quickly taken up by the architects and other professions connected with building.

The extension of the Building Advisory Service to cover the needs of the professions would seem a sensible and logical development, but lest we be carried away on a flood of enthusiasm to correct our established procedure, it would be prudent to consider the time this integration may take before full efficiency is reached in the provision of the end product—the finished building. If we assume optimistically that this goal will be reached in five years, are we quite certain that the conventional system of building using the present proportion of on-site labour will still be with us? Every rise in building labour wages takes us one stage nearer industrialised building, and already new techniques from the manufacturer are regarded as almost conventional. We should, therefore, look ahead and when discussing these problems of integration ensure that the integration of the building component manufacturer is considered at the same time. This will also entail, of course, the co-operation of the operatives, but this is no great administrative problem.

The manufacturers, diverse though their range may be, come together in only the vaguest way every two years through the building exhibition. Perhaps the question we should now ask is 'What about a BIMA—Building Industry Manufacturer's Association?' Such an organisation would not want for work.

Two problems that immediately spring to mind are the distribution, form and content of the industry's manufacturers' technical information to the professions and builders, and the feed-back of the know-how that is produced by them to the manufacturer. Through information properly inter-communicated can come the integration so necessary to our industry.

Notes of the Week

Building for Nuclear Power

SIR John Cockcroft's lecture on Tuesday to the RIBA on 'Architectural and Building Requirements as Related to Atomic Energy' (extracts from which are given in this issue) fell to some extent between two stools. The greater part of his talk was given over to a description of the various buildings which have been erected for the nuclear power programme, and though Sir John acknowledged his debt to Mr. T. L. Viney, FRIBA, and others in providing the technical information on construction, some may have felt that this aspect could have been dealt with better by an architect, say Sir Charles Mole or Mr. Viney himself.

Only towards the end of his talk did Sir John touch on a subject which he is particularly qualified to speak on—the effect of cheap nuclear energy on electricity production and, as a consequence, on the the heating of buildings. Recently in *The Builder* (October 4), Mr. Dex Harrison analysed the implications of Sir Christopher Hinton's Stockholm lecture in which he forecast that nuclear-produced electricity would within a measurable time bring the overall cost of this form of power, regarded as a heating agent, on to a par with oil- and solid-fuel-powered heating. While Sir John Cockcroft alluded to this, he did not carry the thesis much further—certainly not as far as a lot of architects might have liked who are faced with making the right decision on heating methods to install in buildings which may well have to serve the next 50 years. But perhaps at this stage this was asking too much. Later on we may, we shall hope, have a paper on 'Atomic Energy as Related to Architectural and Building Requirements.'

Competition Assessment

IT IS NOT DIFFICULT to explain the interest which the architectural competition arouses in the profession. The subjects are not always 'front-line' projects, and on a value-basis alone competition buildings are frequently outweighed by other structures. Yet any project that is the subject of a competition for plans draws the limelight to itself. The reasons are simple: chief among them is that the competition, rather like the by-election in politics, affords a periodic opportunity to assess the present state of architectural design in regard to a particular type of building.

The competition system itself is passing through a difficult period just now. Architects taken as a profession are in a slightly bewildered state; their problem is to crystallise out of the international pot a form of architecture which is acceptable visually to Great Britain and suitable constructionally to its climate. Difficult to solve as is the latter problem, it is as nothing compared with the difficulty of satisfying the layman in the matter of design; and the lot of the assessor since the war in trying to satisfy all interests has been unenviable. Yet it is true that those competition assessors (and winners) who have refused to make any compromise with lay taste have, on the whole, been most successful, as the TUC building, the Churchill Gardens scheme and the Golden Lane housing (to name three only) seem to show.

☆ ☆ ☆

THE MOST RECENT AWARD, in the Enfield Civic Centre competition, may not give general satisfaction. In the view of Mr. James Melvin, who reviews the designs on another page, 'the premiated designs, though no doubt workable solutions, lack that touch of imagination which any building of quality must have.' Be that as it may, the designs placed first, second and third, with the elevations of the nine commended sets of drawings are reproduced in this issue, and architect-readers may make up their own minds on the merits of the respective designs. On one point at least there will be complete agreement among competitors—that this has been an admirably organised competition in every way. Collaboration between Mr. S. Rowland Pierce, the assessor, and the Town Clerk's department has been excellent, and competitors and Press have received every courtesy and help.

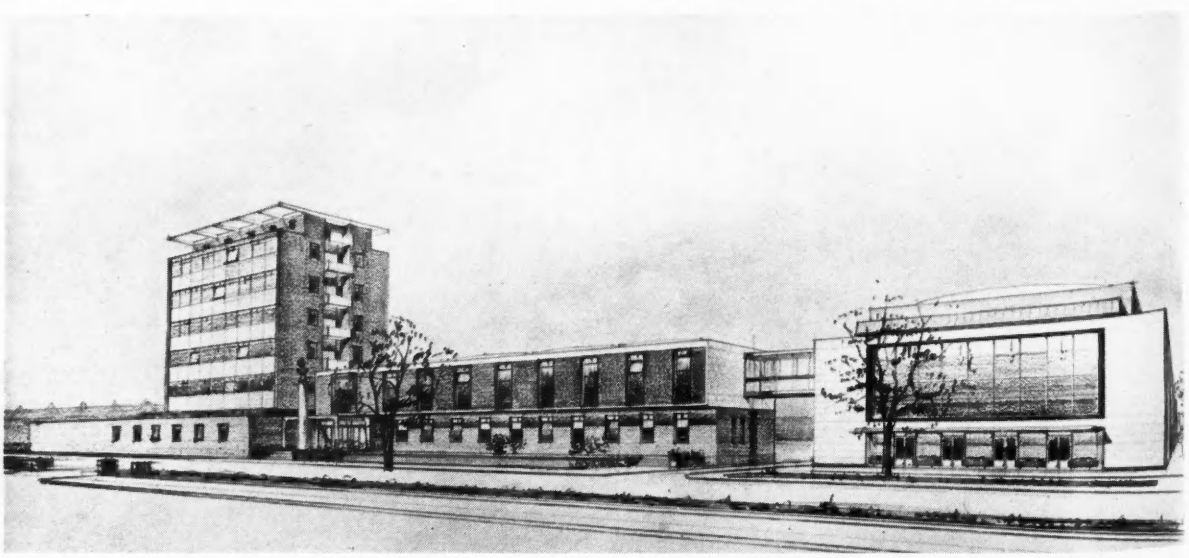
New Uses for Old Churches

THE interim report (1957) of the Georgian group records four cases of redundant, war-damaged Georgian churches in London, all of outstanding merit, for which alternative or supplementary uses have been or may be found. Soane's Holy Trinity, St. Marylebone (1825) has been converted by Mr. Cecil Handisyde, ARIBA, into offices for the SPCK, part being retained as a smaller church; Hawksmoor's St. George-in-the-East, Stepney (1712-30), while retaining its religious uses, is planned by Mr. Arthur Bailey, FRIBA, to be adapted in part as residential flats and ancillary offices; Inwood's St. Peter's, Regent-square, St. Pancras (1822) is planned by Mr. Richard Davies, FRIBA, for conversion into a hall for concerts, etc., with a branch of the public library in the gallery; and Archer's St. John's, Westminster (1721-28) may be turned into a concert hall, from designs by Mr. Louis Osman, FRIBA.

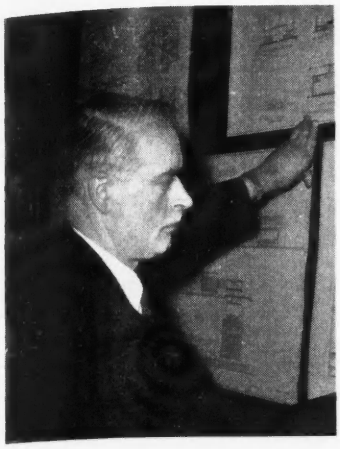
The report contains references to other matters of interest, notably the purchase, by Mr. Clough Williams-Ellis, of the Colonnade and Bath House, Arno's Castle, Bristol, for re-erection at Portmeirion, and the proposed conversion of the Nash Terraces, Regent's Park; and includes the substance of Mr. Henry Brooke's excellent address to the annual meeting last July. There is also a full list of members. The report is issued from 2, Chester-street, London, SW1.

House-Builders' Dinner

THE annual dinner and dance of the Federation of Registered House-Builders, which was held at the Park Lane Hotel,



ENFIELD CIVIC CENTRE.—Perspective view of Mr. Eric G. Broughton's winning competition design. (*See pages* 1032-5)



Mr. Eric G. Broughton, ARIBA, AMTPI, whose winning design in the Enfield Civic Centre Competition is illustrated

WI, on December 5, was enlivened by one of the best teams of after-dinner speakers heard in the West End this winter. Outstanding individual performances in the art are not so rare, but on this occasion all four speakers maintained the high level of wit and wisdom first achieved by the Federation's President, Mr. D. G. Howard, who proposed the toast of Her Majesty's Government.

Mr. Howard drew freely on Gilbert and Sullivan for the verses with which he interlaced a speech which at first seemed to be all sweetness, but this did not prevent him drawing his rapier with which he quickly pricked any complacency the Government might feel about their present housing policy. Mr. Howard left Mr. Harmar Nicholls, Parliamentary Secretary to the Ministry of Works, who later responded to the toast, in no doubt of the unpleasant political consequences that might follow from the Government's 'coming in on 300,000 houses a year and going out on 200,000.'

Mr. Nicholls, who may be expected to have foreseen some such contingency, was quite unruffled by this—no doubt he has to put up with much worse in the House! He blandly explained the need for a pause at the peak of national expenditure on housing and declared himself absolutely certain that the future for the private house-builder was 'rosy.'

The Federation's immediate Past-President, Mr. C. R. Setter, who proposed the toast of the guests, said he thought that the time had come for the RIBA to have another look at their scale of professional fees so that more purchasers would make use of the services of architects in the design of their houses.

The last of the quartet of speakers was Mr. Herbert Ashworth, general manager of the Co-operative Permanent Building Society, who said that house-builders were a much-maligned race, whereas in fact they had done a very good job of work since 1919. He had seen a great deal of housing on the Continent, and he could affirm that in no country in Europe was the standard of housing as high as here.

CORRESPONDENCE

Private Work by Official Architects

To the Editor of *The Builder*

SIR,—One rather important aspect concerning the client's interest, where one is minded to seek the services of a full time paid official, is that of defence of that interest, should this extend so far, for example, as to involve giving expert evidence in a court of law or before the Official Referee.

In a recent breach of contract and alleged failure to perform the terms by a builder, it was brought to my notice by the client that he was very concerned over calling his architect, as he was employed in an official position. There was difficulty in obtaining time away from his duties, and a somewhat natural reluctance to attend open court because of the publicity. As a matter of damages was in the claim, the client instructed solicitors, counsel was briefed, and it was considered essential to hear the architect concerned. Cross examination of this expert witness would undoubtedly bring out his source of full employment, but as an architect the client felt entitled to full and proper advice and support, notwithstanding that the commission had been accepted in spare time.

There seems an element of risk to professional status under such conditions, which may affect the profession as a whole.

J. L. EDWARDS [Architect].

1, Great North-road, Welwyn, Herts.

Architects in Government Service

To the Editor of *The Builder*

SIR,—I have read with some interest the letters written by Mr. Sidney Loweth and Mr. Richard Sheppard concerning the formation of a Society of Local Government Architects.

May I, as one of the lesser members of the profession, be permitted to ventilate an anomalous position which exists in other Government posts, and which is long overdue for attention by some authority. It may not be general knowledge, even within the profession, that there are Registered and Chartered Architects in Government employ who for the past six years have suffered the humiliation of being deprived of their professional status by assimilation into the Technical Grade, usually reserved for clerks of works and like categories.

This retrograde step has resulted in men, hitherto of professional status, being categorised as unqualified and non-professional, and, not least, finding promotion barred in the professional field. It is difficult to imagine any situation more incoherent or incompatible; indeed one such employee conducted his own private practice for 10 years prior to entering the 'service' of Government employ.

Whilst it should be unnecessary to set up further Institutes or Associations to ensure that justice be meted out to professionally-trained men, it may well be the only solution if existing bodies are not prepared to safeguard the interests of their members. This, unfortunately, would appear to be the present situation.

This matter has been discussed with eminent members of our time-honoured profession, all of whom without exception were shocked at the very existence of such a state of affairs, men who undoubtedly would support and welcome the opportunity of rectifying this state of injustice. Surely, it should be without contradiction that men who enjoy their professional status in the field of private architecture should be accorded an equal distinction while in Government employ?

CHARTERED ARCHITECT.

Insulation in the home—for warmth and quiet

Then and Now

To the Editor of *The Builder*

SIR,—How right Mr. Michael Pattrick was (your last issue) when he said, 'The tenets of one generation are neither better nor worse than those of another. They are just different.' Modernists and 'period' fanatics please note!

In my youth 'Victorian' was a term of contempt. Today we form societies to protect Victorian architecture. A few years ago pictures by Victorian artists were almost unsaleable. Last week a painting by Burne-Jones was sold for £3,500.

But was Mr. Pattrick right when he denied that the Modern Movement grew out of the natural development and scientific use of new materials? Not altogether, I should think. Surely it is the revolution in constructional methods which has set architecture on a new course. Those 'new forms of aesthetic expression' to which he referred owe their existence, I would suggest, to structural steel and reinforced concrete.

SPERO.

University College, London

AN EVENING reception and reunion will be held at the University College, London, on Friday, February 28 next (6.30 p.m.-9 p.m.). Former undergraduates or postgraduates who entered the College during the years 1934-38 are invited. Applications for tickets (which are limited and may have to be allocated by ballot) should be made to the Assistant Secretary, UCL, Gower-street, WC1.

COMPETITION

Enfield Civic Centre Award

NOW illustrated are the designs placed first, second and third in the architectural competition organised by the Borough of Enfield, Middlesex, for a Civic Centre in Silver-street, Enfield. Also shown are the principal elevations of the nine commended designs. The award of the assessor, Mr. S. Rowland Pierce, FRIBA, DistTP, was given in *The Builder* last week, and is as follows:

1st (£1,000 premium). Design No. 23: Eric G. Broughton, ARIBA, AMTPI, ARCA (Soane Medallist), 44, Denbigh-road, Ealing, W13.

2nd (£750). Design 79: Clifford Culpin, FRIBA, and Associates (Clifford Culpin, Anthony Sargeant and Philip Vallis), 39, Doughty-street, WC1.

3rd (£250). Design No. 44: Anthony R. Osborne, ARIBA, 144, Bridge-road, East Molesey, Surrey.

The following designs are commended (not in any order of merit): No. 29, Eric Hardy, BA(Arch), ARIBA, DipTP, and Anthea Hardy, BA(Arch), ARIBA, DipTP, Downley Common, nr. High Wycombe, Bucks; No. 64, Grenfell Baines and Hargreaves, AA.RIBA, 12-24, Guildhall-street, Preston; No. 68, F. Hamer Crossley, DiplArch(L'pool), FRIBA, in collaboration with H. H. Powell, BArch(L'pool), FRIBA, Duffield, nr. Derby; No. 76, The Architectural Group (K. S. Mobsby, ARIBA, G. M. Jennings, ARIBA, and Associates), SW1; No. 77, J. B. F. Cowper, FRIBA, and K. M. Poole, BArch, ARIBA, WC1; No. 82, J. P. Lomax, MA(Arch), ARIBA, and Eduardo Dodds, Dip. Arch(Lond), ARIBA, W1; No. 90, Donald R. Stewart, MA, ARIBA, and E. R. Saxon Snell, LRIBA, W1; No. 92, Alec Shingler, FRICS, Frank Risdon, FRIBA, AADip(Hons) and William Wakeling, ARIBA, WC1; No. 103, Clifford Strange, LRIBA, EC2.

The Assessor's Report

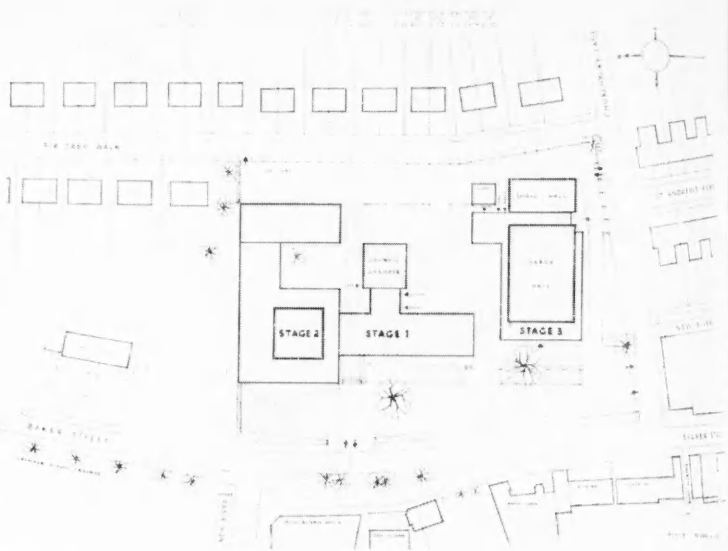
MR. S. ROWLAND PIERCE'S report is as follows:

After the public announcement of the competition, 427 applications for the conditions of competition were received. 226 applicants retained the conditions after expiry of the time for returning the conditions (October 21) in accordance with clause 14 of the conditions. 108 sets of drawings were finally submitted by competitors for adjudication; six of these were delivered after the time set for receipt of the designs, but in all cases delay was shown to be due to transport difficulties, and these designs were admitted to the competition. One design has been excluded from the competition, as it did not submit (*a*) the drawings asked for and (*b*) a cubic measurement and estimate of cost.

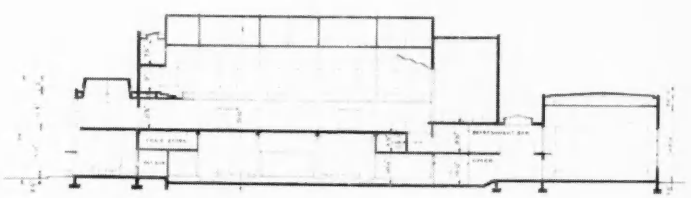
The Council are to be congratulated on the number and standard of the entries. The general average standard of the entries is high and a large number of designs have merited close and detailed examination in the final stages of adjudication. No single design, however, was so outstanding as to make the final award at all obvious.

After full and careful consideration and in accordance with the terms of the conditions, I hereby award as follows:

(*Continued on page* 1036)



DESIGN PLACED FIRST. *By Eric G. Broughton, ARIBA*



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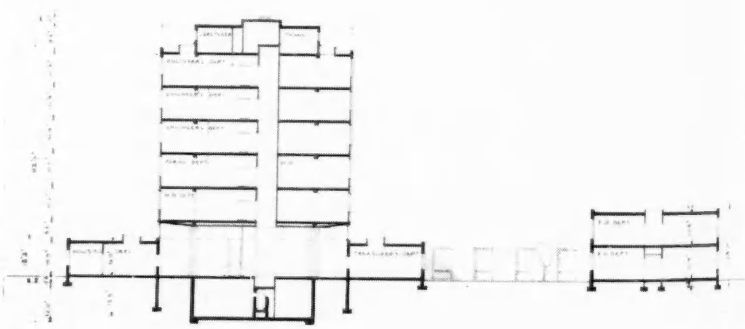

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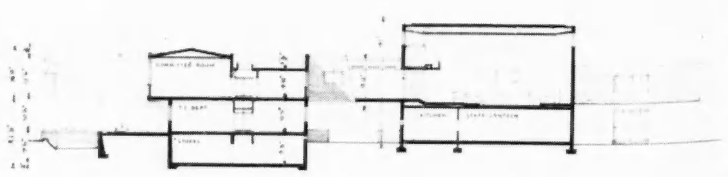

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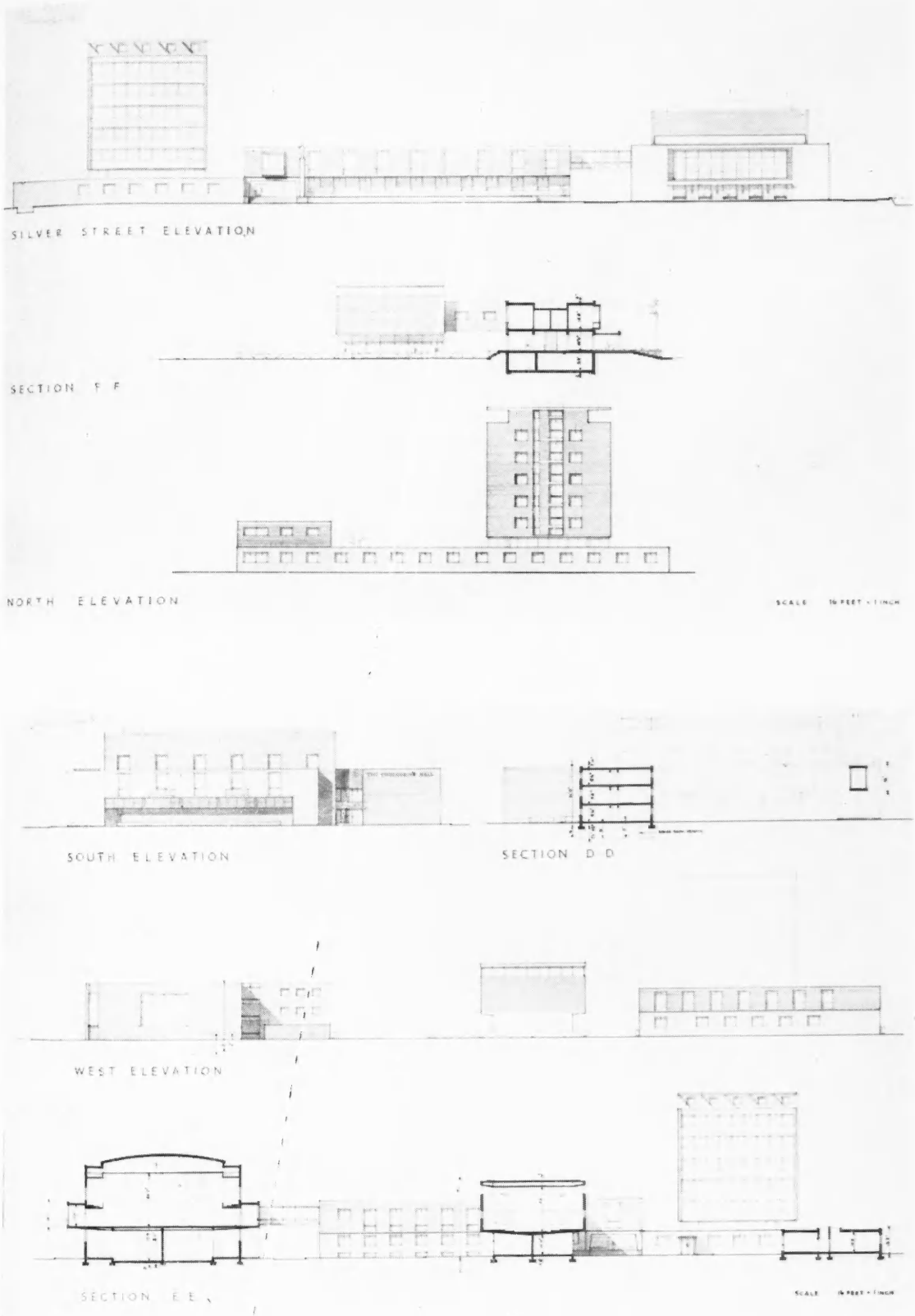
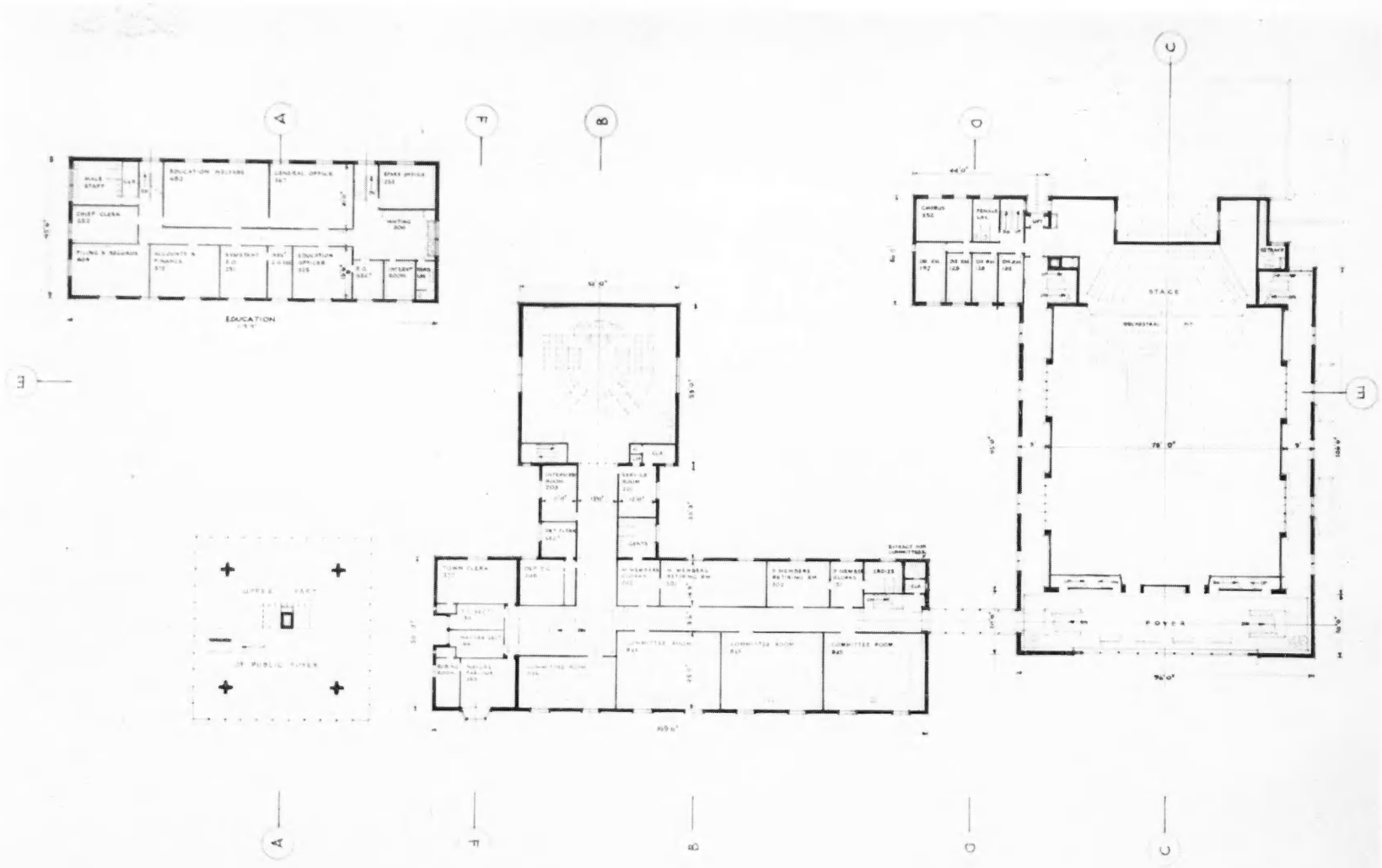
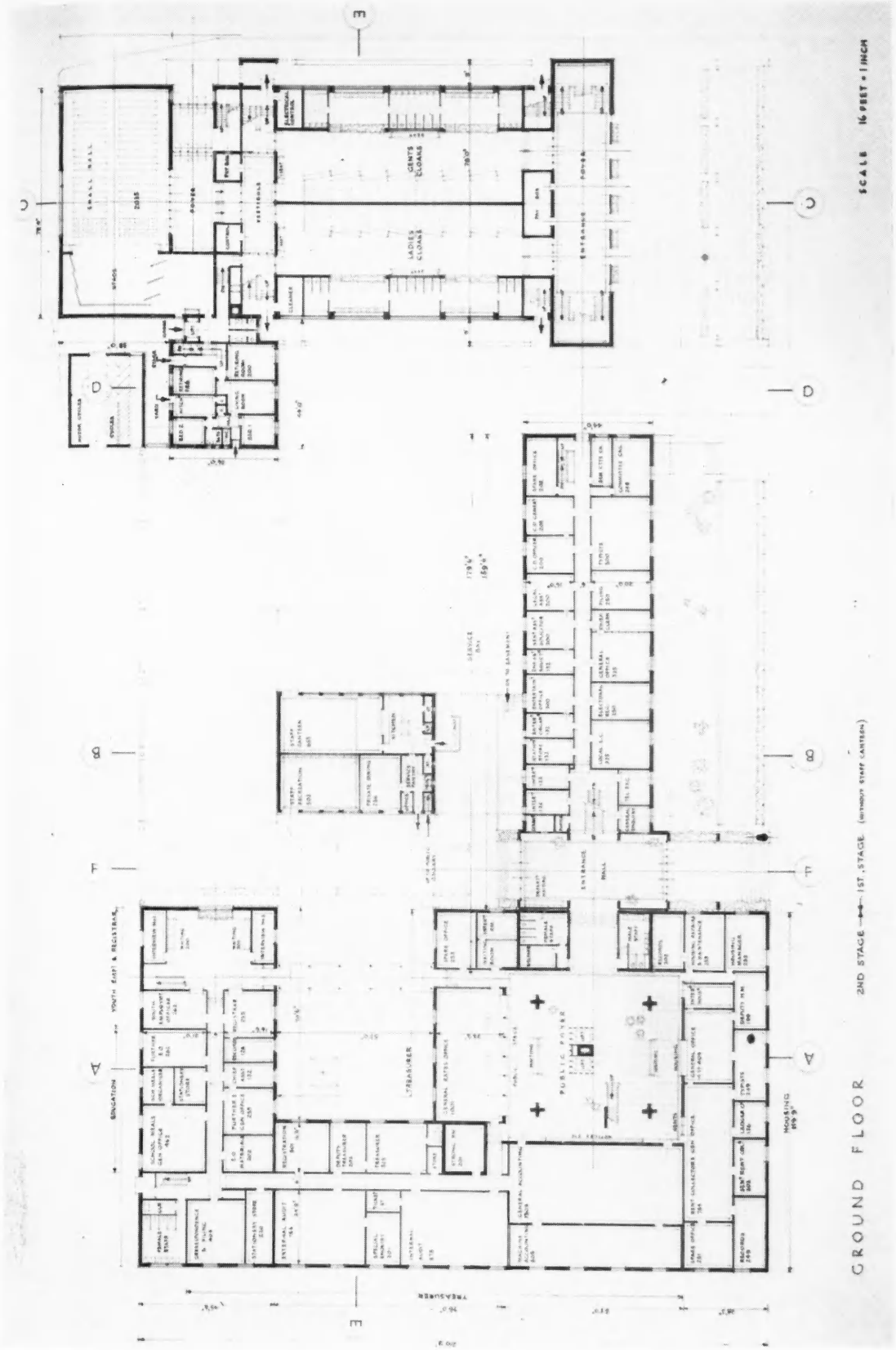


DESIGN PLACED FIRST. *By Eric G. Broughton, ARIBA*



DESIGN PLACED FIRST. *By Eric G. Broughton, ARIBA*



DESIGN PLACED FIRST. *By Eric G. Broughton, ARIBA*

DESIGN PLACED FIRST. *By Eric G. Broughton, ARIBA*

(*Continued from page* 1032)

(*a*) The first premium to the author(s) of Design No. 23.

(*b*) The second premium to the author(s) of Design No. 79.

(*c*) The third premium to the author(s) of Design No. 44.

I would add the following observations on the premiated designs. No. 23 is an imaginative and good answer to the problems set ; the general architectural finish and massing are suitable, not only to the site, but are well related to the existing town plan and the skyline of the central area of Enfield, to which the tower block will make an interesting and suitable contribution. The detail planning is sound, though some adjustments to the accommodation in the tower block may require second thoughts. Apart from certain minor criticisms of detail, the town hall block is ingeniously planned and the interior arrangements have much imaginative dignity. There are minor errors in the cubing and estimate of cost, which do not, however, affect the totals materially (i.e., a plus of slightly over 1 per cent). I am of the opinion that design No. 23, with reasonable care, could be carried out for a sum within 10 per cent of the estimated cost.

The other two premiated designs, while of considerable interest and quality, fall behind that placed first in a number of matters. I wish to place on record the good but varying merits of a number of other designs, and I would commend the following entries : Nos. 29, 64, 68, 76, 77, 82, 90, 92, 103.

The Winner's Report

FOLLOWING are extracts from the report of Mr. Eric G. Broughton, ARIBA, AMTPI, the winner:

This design indicates the use of brick and artificial stone which harmonises with the town of Enfield. In this way the entity of this country town may be maintained.

The conditions called for a scheme of two structures one of which, the Municipal Offices, is to be built in two parts. Each part is to be separate.

The Municipal Offices. The accommodation is expressed externally by a members' unit, by a tower unit and by a County services unit—all of which are placed on a 'podium' unifying the entire Municipal Offices. Punctuation to the whole is imparted by the main entrance.

The members' unit is approached from the right of the entrance hall, whilst to the left lies the public foyer, the nucleus from which the various departments lead.

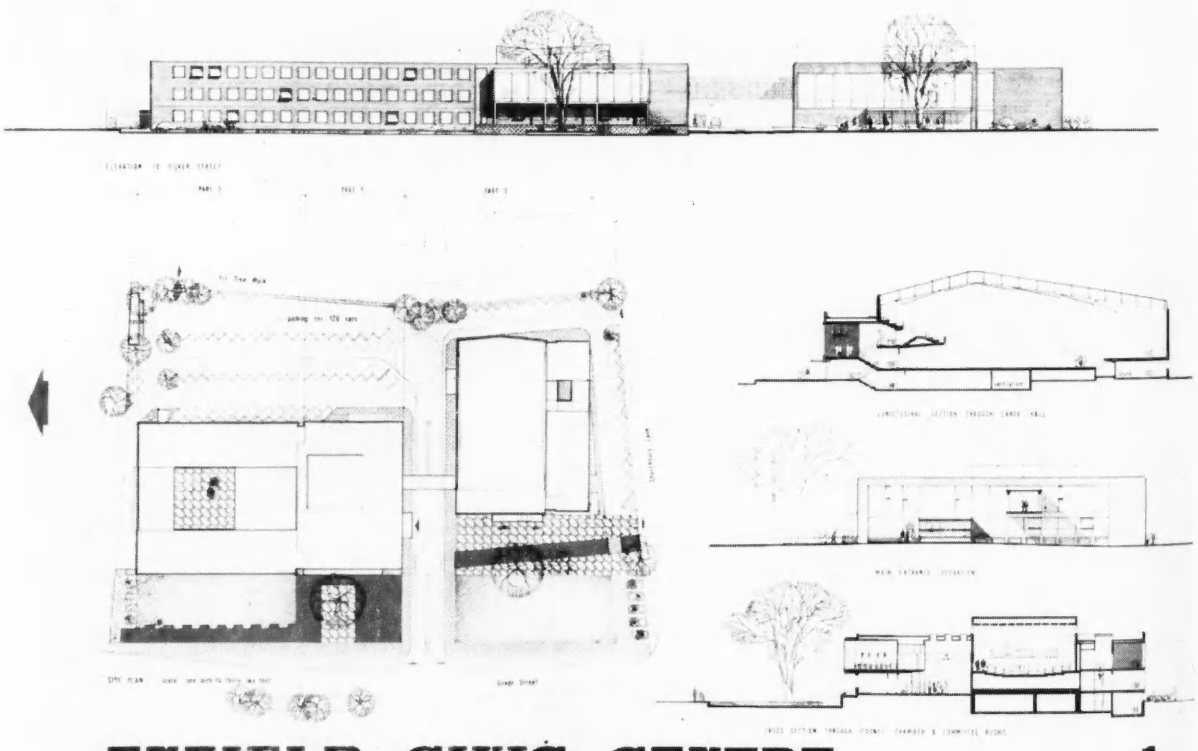
This inner foyer incorporates the Treasurer's and Housing Departmental waiting spaces. This should be borne in mind when comparing floor areas as the extent of them is undefined.

The tower unit in part 2 is introduced from a town planning point of view to give focal interest to the Civic Centre in relation to Enfield.

The Town Hall. The clarity of external expression is developed further with the isolation of the town hall. The conditions call for two multi-purpose halls to be used independently. It will be possible to control patrons leaving cloakrooms at both ends of the ground floor. The line of the balcony is broken purposely, as a large balcony is apt to create a feeling of claustrophobia when sitting or dancing underneath. This also assists to carry the eye from floor to ceiling. Viewing promenades on south and west sides have been provided.

The Forecourt. The proximity of the New River to public ways will be fostered.

Construction. One- two- and three-storey buildings have precast floor slabs resting on loadbearing walls; while drawings indicate rooms of varying widths, it is the intention to standardise them for structural economy. In addition the committee rooms will have concrete slab roofs shaped as shown, and the council chamber will have light steel truss roof. The tower unit will have a reinforced concrete frame supported on the ground at five points (four columns and a chimney shaft). Both halls will have steel truss roofs, bearing on brick walls in the case of the small hall and on a reinforced concrete frame in the case of the large hall. The frame of the latter will carry cantilevered galleries and corridors.



DESIGN PLACED SECOND. *By Clifford Culpin and Associates (Clifford Culpin, FRIBA, Anthony Sargeant, ARIBA, and Philip Vallis, ARIBA)*

Floors generally of precast concrete beams; roofs of Trofdek construction or similar, with high insulation value.

In considering the use of suitable materials for the tower unit, the question of weight and durability for a civic building must be considered. It would be premature to state precisely the materials for the glazed east and west sides . . . but the character would be similar to other windows which will be of the Carda type and of galvanised steel. It is not intended to overglaze the tower.

Externally, it is proposed to use a light stock brick for the podium and a dark brick for the superstructure with reconstructed stone dressings.

Heating.—By low pressure hot water radiators and convectors. It is hoped to install invisible panel or floor heating in offices.

The total superficial floor area given is 45,559 sq. ft. Asked for, 44,710 sq. ft.

The estimated cost is :—

Part 1 (Council Chamber suite)	188,175
Part 2 Tower Unit (General Administration)	247,105
Part 3 Town Hall (Public Halls)	246,953
	£682,233

'CRIT': The Enfield Civic Centre Competition

By James Melvin, FRIBA

IT is fashionable these days to condemn competitions; they entail too much work for too many people, the assessor selects a safe rather than an enterprising scheme, the clients are forced to accept a design they do not like and so on; no doubt there are some valid objections. There is, however, one unassailable fact—open competitions are the only method of selecting an architect where reputation, experience, intrigue and connections count not a whit, and for that reason alone, whatever their demerits, they are an essential factor in the development and practice of architecture.

Possibly one of the more serious objections is the wasted hours of work of the unsuccessful competitors at a time when the profession is busy and its acceptance as co-ordinator of the building team depends on the ability to combine efficiency with adherence to agreed time schedules. To think that aesthetics can be evaluated in terms of economy is, however, a delusion of this age, and while previous generations were able to indulge in non-productive cube, we must content ourselves with a lot of searching after a satisfactory minimum.

Flaws of Limited Competitions

Limited and two-stage competitions have both been put forward as methods by which unnecessary work can be avoided. The former, though, seems to have the worst of both worlds. The promoters have already selected their short list of distinguished architects but lack the convictions to settle on any one firm; this privilege is the assessor's, but oh, what woe if he should misjudge his clients' wishes and risk his own judgment. The sorry tale of the English Electric competition has surely not only been the end of the Gaiety Theatre.

There has probably been insufficient experience in two-stage competitions, certainly in this country, to be able to be clear as to how valuable they can be, but it is questionable whether the best solution to a problem in these days of complex planning and structure can be arrived at without many hours of investigation and research. Until the last piece of the jig-saw falls into place the general development may be better kept fluid. A premature decision on a limited number of possible solutions may result in the selection of a scheme which proves unworkable in detail, or, alternatively, the passing over of competitors whose more logical approach needs more time and drawings to develop.

Open competitions win all along the line: Pimlico, the TUC, Hunstanton, Golden Lane prove the case. Is Enfield in the same tradition ? I doubt it. Perhaps here is the most valid of objections to open competitions: Should an assessor regard it as his prime duty to select a scheme which in every minor detail is the most workable one of those submitted, however dull it may be, or should he choose a scheme where the competitor has an imaginative approach, even though some of the detailed planning is not in accordance with his own standards? Some assessors, in fact, in their reports go so far as to say that the scheme to which they have awarded the first premium may well have to be modified in many of its detailed planning points, but they have no hesitation in putting it forward as the overall conception, as the character of the buildings is such that they are convinced that the competitor will best interpret the client's requirements and prove a satisfactory architect. This choice is the assessor's prerogative.

In fact, once the assessor is selected the die is cast. The promoters may have chosen an assessor who cannot see any virtue in architecture other than his own or one who is aware of the many developments in the architecture of this century.

It is perhaps unrealistic to expect an assessor to be entirely open-minded, for architecture is, after all, an art which involves the emotions as well as the mind, and in the majority of cases he is perhaps liable to choose a scheme which resembles his own approach to the problem. The now famous exception which proves the rule is Sir Percy Thomas' selection of David Aberdeen's scheme for the TUC building. The more discerning competitors will realise this tendency and it undoubtedly has a direct bearing on the type of entrant a competition attracts.

In this competition, however, it is a little disheartening to have to admit that we seem to have the worst of both worlds. The premiated schemes, though no doubt workable solutions, lack that touch of imagination which any building of quality must have, and are pedestrian in approach and curiously reminiscent of the Town Hall architecture popular in the 'thirties. Not that imaginative qualities are lacking from all the schemes in the exhibition. There are a fair number on the lunatic fringe which at least presumably give the assessor and certainly the Press some enjoyment—do not miss the three Gasometers or the Austrian Baroque railway station, nor the ingenious composition which reflects distinctively on the same sheet Frank Lloyd Wright and Mandalay. However bizarre and wrong-headed these schemes may be, at least they indicate in their designers a conviction and imaginative approach sorely lacking from the safer schemes.

Of the 108 sets of drawings submitted a surprisingly large number have the character of the inter-war Civic Centre style. The Civic Centres of Hertford and Norwich, to name only two by the assessor himself, were distinguished buildings in this idiom, but the time for such buildings is past and the competitors' attempt at emulating them have a curiously amateurish air. In the past, traditional teaching and disciplined scholarship ensured that the buildings in that style were moderately successful in their consistency: now, however, it would seem the tradition is forgotten and the contemporary idiom ill-assimilated.

A large number of the competitors were influenced in the disposition of their blocks by attempting to make one or more of them parallel to the frontages of the site. As these frontages were only slightly out of square with the others, this seems rather unnecessary and leads to awkward junctions and open spaces without architectural significance. Nearly all the designs had flat roofs; perhaps a pity, as many of the buildings with this pseudo-traditional air would have looked probably better if the roofs were pitched. Although there were some which affected odd shapes, both Unesco and the United Nations had their adherents, though somewhat out of scale.

Without making a detailed study of the problem it is probably impossible to appreciate fully the virtues of the scheme by Mr. Eric G. Broughton (No. 23) awarded 1st premium. Its initial impact is disappointing, but no doubt its qualities of planning of detail, not readily apparent at first glance, can be developed to provide the promoters with a workable and efficient building.

The second award (79) was made to Clifford Culpin and Associates, Anthony Sargeant and Philip Vallis, and this of the three premiated schemes showed most character and was well presented.

The third award (44) to Anthony Robert Osborne had positive qualities but to a lesser degree, and was functionally satisfactory.

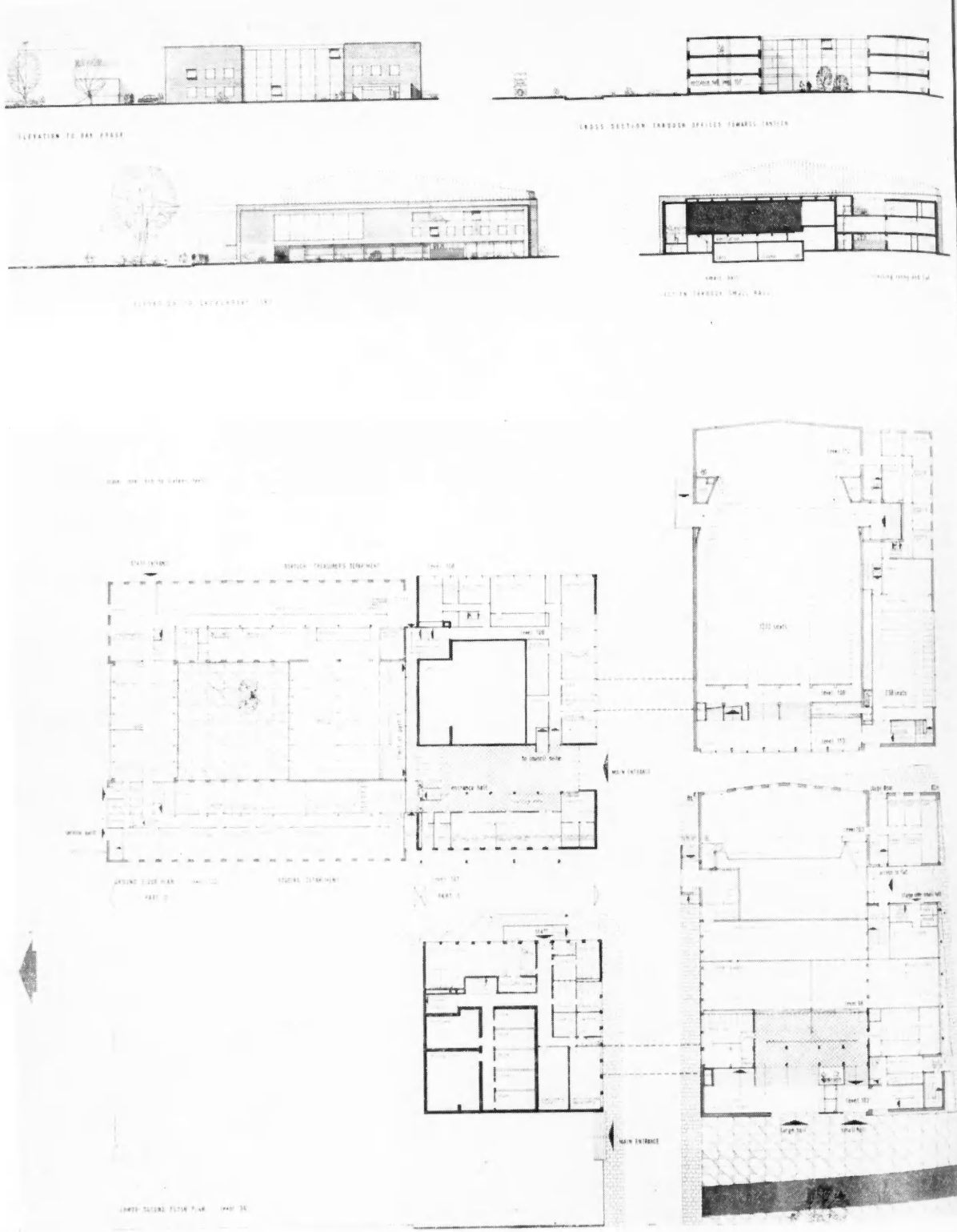
Nine schemes were commended and those by the Architectural Group (K. S. Mobsby, G. M. Jennings and Associates, No. 76) and by J. B. Cowper and K. M. Poole (77) were the most interesting.

Designs of Imagination

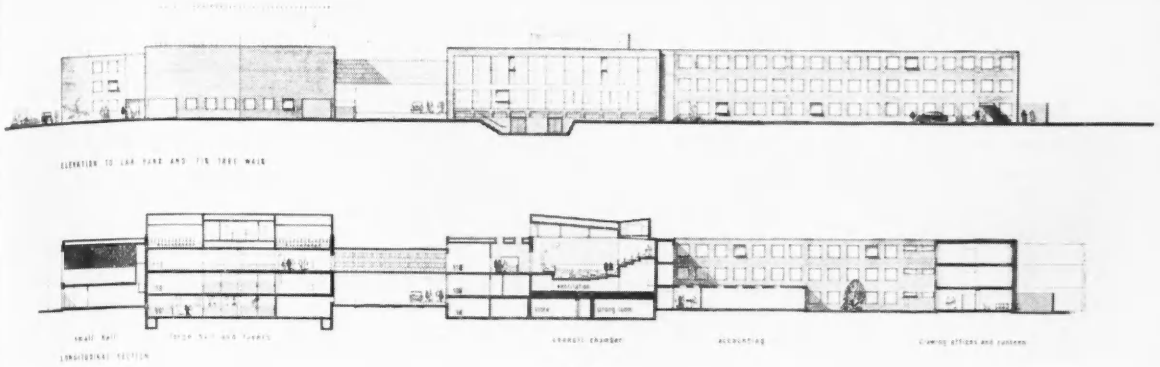
Of the unpremiated schemes there were, however, a number which, though possibly their detailed planning may not have been so practical, showed properties of imagination which properly developed might well have resulted in buildings of much greater architectural interest. No. 33 (H. Krall) simplifies the issue probably to the point of not being functionally possible, but such a straightforward solution of the problem is refreshing after the complexity of so many of the other schemes.

No. 36 (Seligmann, Chalk and Herron) is perhaps the most interesting of all the designs. It demonstrates that architecture must be in 3D, and its appreciation of the plastic qualities of modern materials tempted one to examine its architectural qualities in greater detail. No. 39 (Hutchison, Murta and Hall) was sensitively drawn but perhaps lacked a little conviction. In Scheme 24 (G. A. Wenman) consideration had clearly been given to the spaces between the buildings as well as the buildings themselves.

Finally do not forget the competitors' questions. They usually make good reading and here they are no exception. Have a little thought for the competitor who is told there is no need for a poison store for the rodent control officer, or for the kind-hearted request that the Councillors be allowed to see out of the Council Chamber. Also would not a tower be acceptable, will public banquets be served (regretfully—'No') and should we include acoustic diagrams? Some people never have enough to do.



DESIGN PLACED SECOND. *By Clifford Culpin & Associates*



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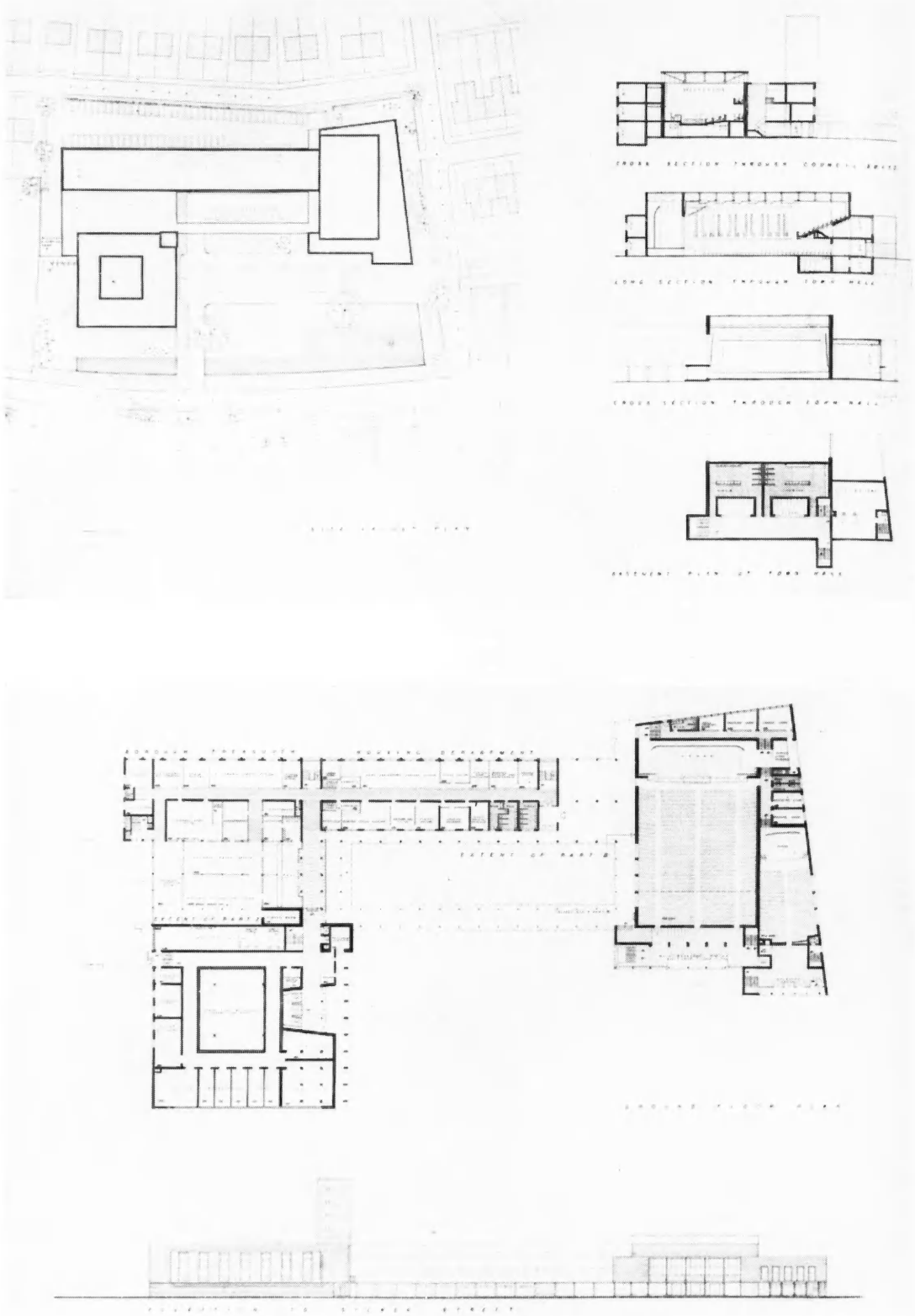
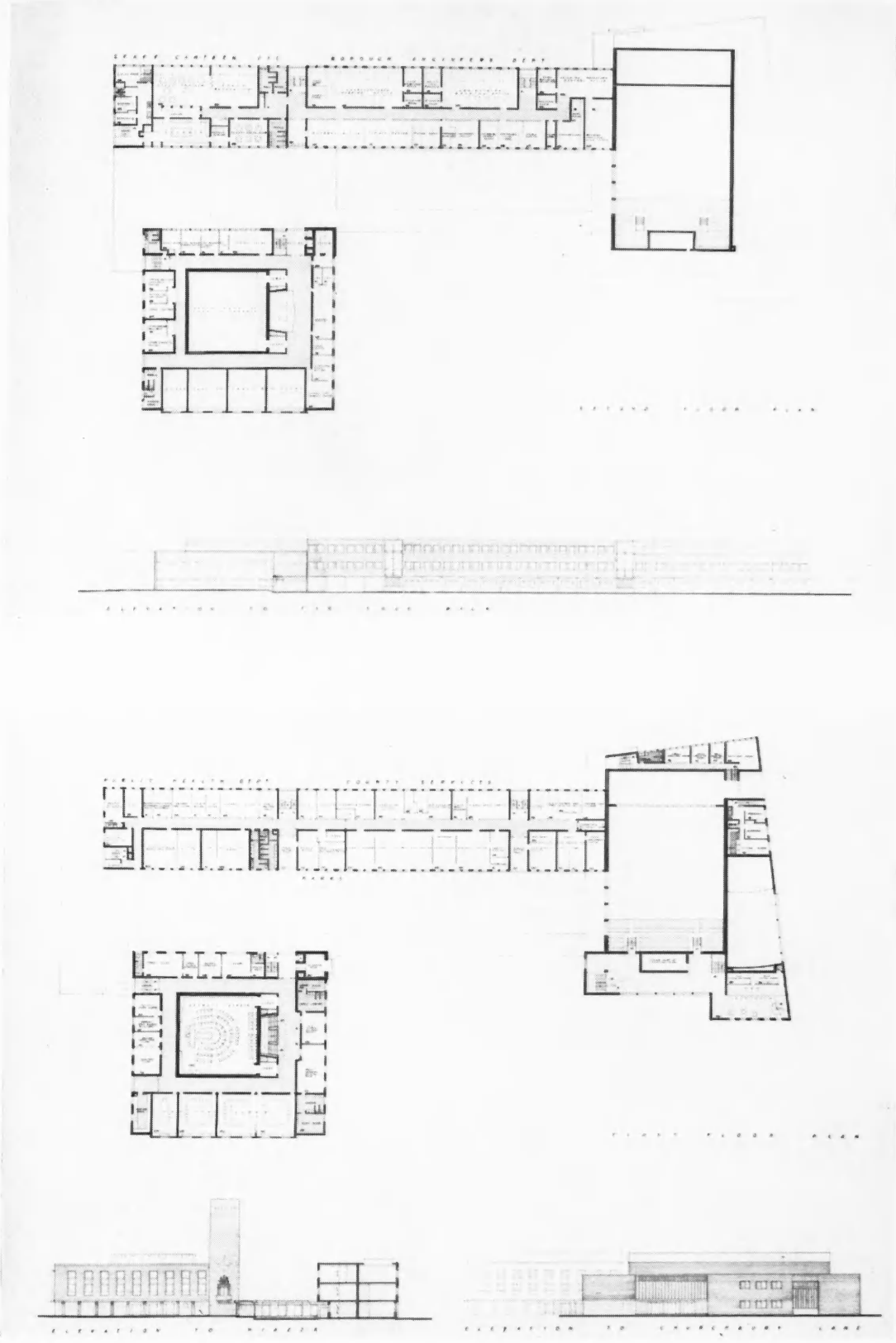
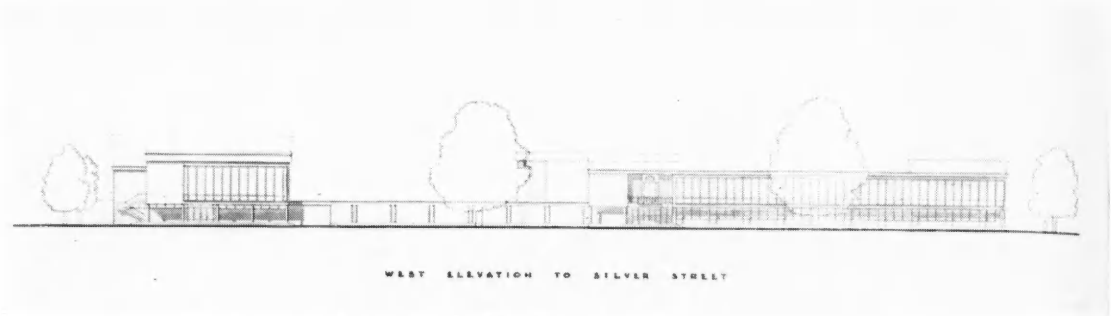


DESIGN PLACED THIRD. *By Anthony R. Osborne, DipArch, ARIBA*

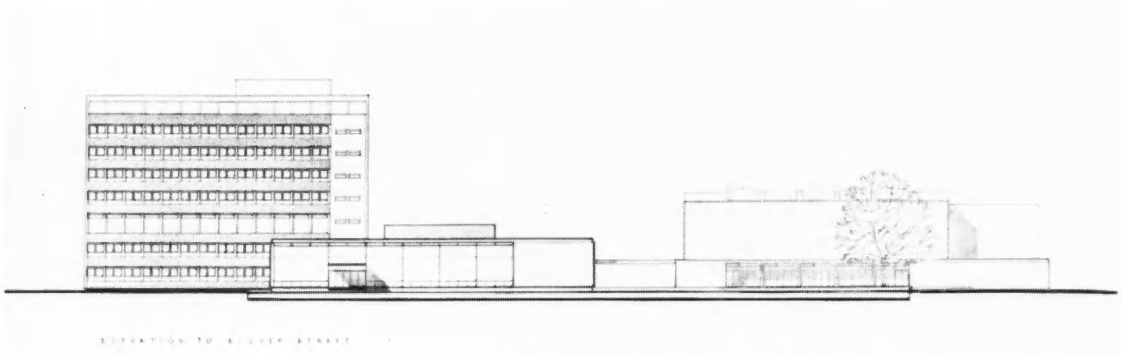


DESIGN PLACED THIRD. *By Anthony R. Osborne, DipArch, ARIBA*

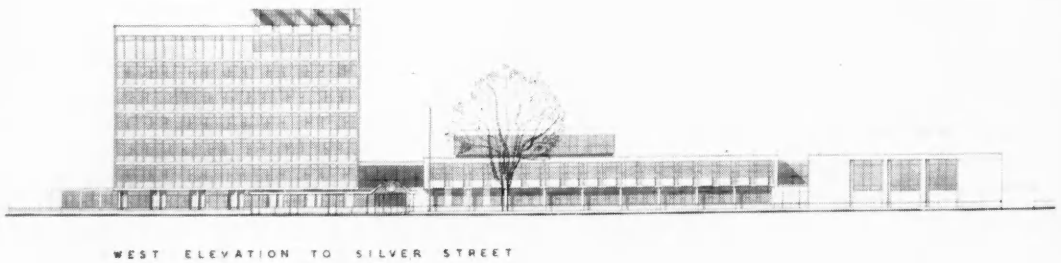
Enfield Civic Centre Competition: The Commended Designs



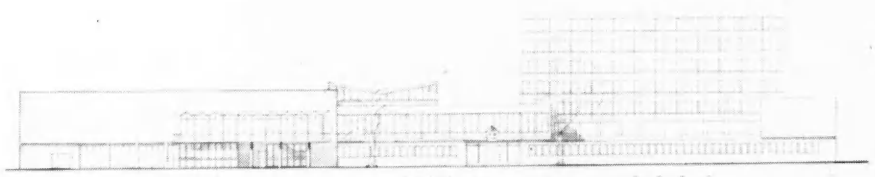
By Eric Hardy, BA, ARIBA, & Anthea Hardy, BA, ARIBA



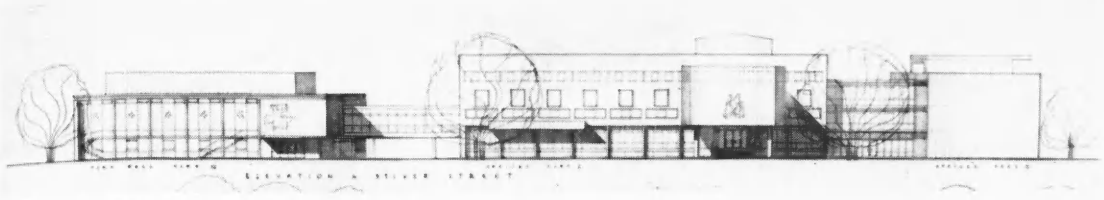
By the Architectural Group (K. S. Mobsby, ARIBA, G. M. Jennings, ARIBA, and Associates)



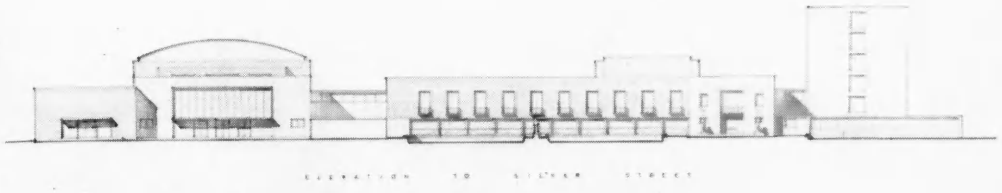
By J. B. F. Cowper and K. M. Poole, F/ARIBA



By J. P. Lomax, MA (Arch), ARIBA, & Eduardo Dodds, DipArch, ARIBA

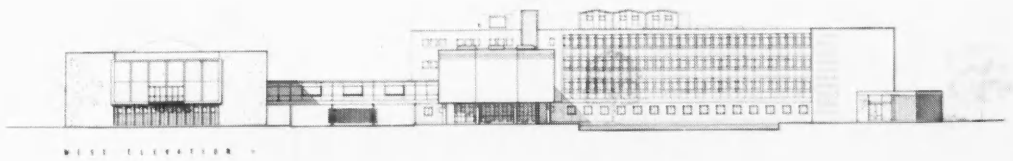


By G. Grenfell Baines & Hargreaves, AA.RIBA

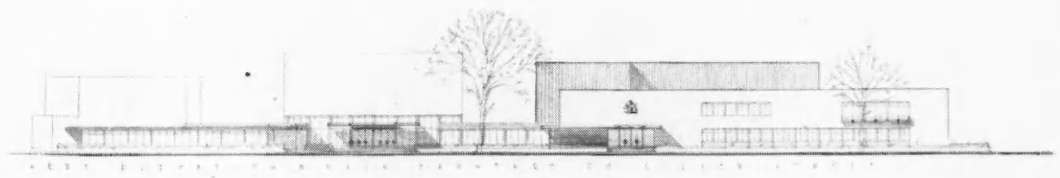


By F. Hamer Crossley, FRIBA, in collaboration with H. H. Powell, BArch, FRIBA

By Donald R. Stewart and E. R. Saxon Snell, A/LRIBA



By Shingler & Risdon, FRIBA, and William Wakeling, ARIBA



By Clifford Strange, LRIBA

Enfield Civic Centre Competition: The Commended Designs

A view of the model

WELWYN— HATFIELD HOSPITAL

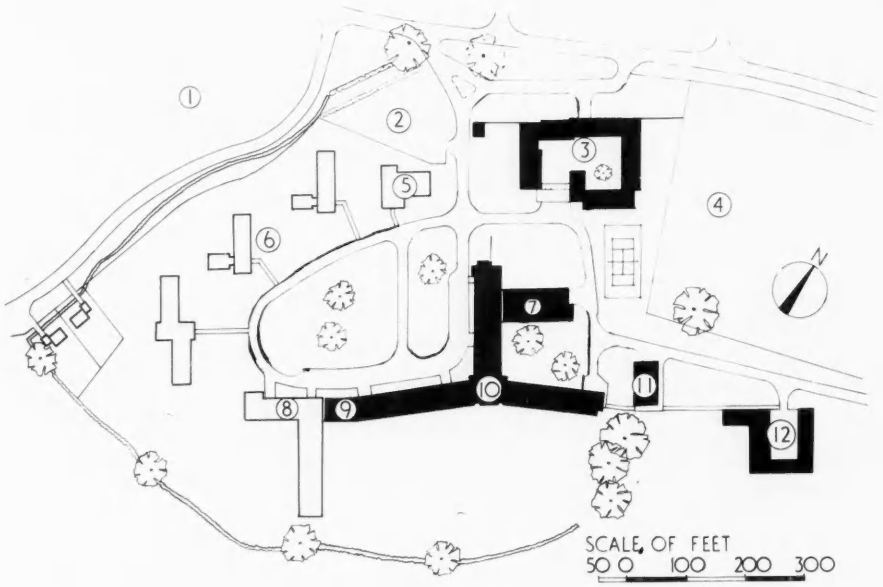
Architect : C. D. ANDREWS, FRIBA

Quantity Surveyors : YOUNG & BROWN

IT is expected that work on the proposed hospital to be situated midway between Hatfield New Town and Welwyn Garden City will start next summer. Tenders for the main building are to be invited in March and applications for inclusion in the selected list may now be submitted. It is hoped to complete the work by 1961.

The whole of the main development, which is estimated to cost one and a half million pounds for building and £500,000 for equipment, will be carried out in one operation and not in phases. This will include the main building of six storeys in brick-faced reinforced concrete frame construction, containing 11 wards with 330 beds, six X-ray rooms, four operating theatres and kitchens, with a three-storey out-patients' department and a large ante-natal clinic adjoining. This building will be served by seven lifts, each large enough to take a bed, and the kitchens will be on the top floor in order to keep cooking smells away from the wards.

A nurses' home, staff houses and the boiler house block will complete the development, but provision is made for future expansion to include a maternity block, a physiotherapy block and three large residential blocks.



KEY

1 Hatfield Hyde.
2 Car park.
3 Residential block.
4 Howicks Green.
5 Future physiotherapy block.
6 Future residential blocks.
7 Out-patients' department.
8 Future maternity block.
9 Ante-natal clinic.
10 Main hospital.
11 Calorifiers.
12 Animal and boiler houses.

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News of the Week

Restrictive Practices and Suppliers

THE Attorney-General, Sir Reginald Manningham-Buller, told the Commons on December 10 that no directions have been given about referring agreements in the building and sanitary suppliers industries to the Restrictive Practices Court. He said permission to refer agreements relating to the supply of some sanitary goods was given to the Registrar on September 3 and in two cases the agreements had been varied by omission of the restrictive clauses. He was not able to say when any other cases would come before the Court.

Mr. Douglas Jay suggested it was unsatisfactory nearly 18 months after the passing of the Act that no cases had yet come before the Court. He asked if the Attorney-General was aware that a great many customers in the industry who had written to him said that the existing policy was to register the restrictive practices and to carry on on the principle that it was legally possible to do that and it would take years before this was stopped.

Sir Reginald Manningham-Buller said that a great many people were amending their agreements and avoiding the necessity of registering by deleting the objectionable clauses. That was satisfactory so long as they did not adhere to past practices. Any evidence that they were adhering to past practices in spite of the alterations of the agreement would be welcomed by the Registrar. As for the delay in getting cases before the Court, Mr. Jay would realise that even were an order made for representation, there were many interests involved and if justice had to be done it meant that both sides must have a proper opportunity for consideration and investigation, and the way in which the Registrar's Office was functioning showed clearly that the time which was being taken to bring the cases before the Court really compared favourably with the time normally taken in any big commercial case which was somewhat analogous.

COMING EVENTS

MONDAY, DECEMBER 16.

RIBA.—Library Group Meeting.—Talk on Szamozzi's 'Idea dell' Architettura Universale' by Dr. Arnold Noach. 66 Portland-pl., W1. 6 p.m.

TUESDAY, DECEMBER 17.

INSTITUTION OF CIVIL ENGINEERS.—Graham Clark Lecture. 'The Engineer and Management.' By Sir Ewart Smith, Great George-st., SW1. 5.30 p.m.

WEDNESDAY, DECEMBER 18.

INSTITUTION OF ELECTRICAL ENGINEERS.—'The Planning and Construction of Large Modern Thermal Generating Stations.' By J. Pimpaneau, Savoy-pl., WC2. 5.30 p.m.

MODULAR SOCIETY, LTD.—Annual meeting. Building Centre, 26 Store-st., WC1. 6.15 p.m.

RICS. (Junior Organisation Quantity Surveyors').—Christmas Dinner. 'Windsor Castle,' nr. Victoria Station. 6.30 p.m.

BIRMINGHAM & FIVE COUNTIES ARCHITECTURAL ASSOCIATION.—Junior Members' meeting. 'The White Swan,' Edmund-st., Birmingham. 6.30 p.m.

THURSDAY, DECEMBER 19.

INSTITUTE OF LANDSCAPE ARCHITECTS.—'Peterhof, Vaux-le-Vicomte, and Versailles.' By Mrs. C. Villiers-Stuart (F). Housing Centre, 13 Suffolk-st., SW1. 6.15 p.m.

Punjab University Appointment

MESSRS. RAGLAN SQUIRE AND PARTNERS have been appointed architects for the new University City of the Punjab on the outskirts of Lahore, to replace the present University buildings, which are outworn and inadequate. The new University will be one of the largest in the Commonwealth.

Mr. William Whitfield, ARIBA, AMTPI, is working in association with Messrs. Raglan Squire and Partners on this project. Mr. Whitfield left for Pakistan on December 6 to make arrangements for the foundation stone ceremony on December 30. The foundation stone will be laid by Major General Iskander Mirza on the occasion of the Pan Islamic Colloquium at Lahore.

This project has been accepted by the United Kingdom Government under the Colombo Plan, as a contribution to the development of technical education in Pakistan.

Building Centre Jubilee

THE BUILDING CENTRE has issued a Bulletin to mark its 25th year of active life in exhibiting building materials and equipment and in providing technical information. The Bulletin reveals that the information service is the largest in any industry in the British Isles, having received 106,913 enquiries last year.

Bombed out of its Bond-street home, the Building Centre occupied the old RIBA headquarters in Conduit-street until 1952 when the demand for exhibition space led to a move to the present building in Store-street. Within five years this has become filled and the Building Centre is expanding again. An existing two-storey building at the back of the premises has been acquired and, after alteration work now in progress, will be taken into use in December. Completely new and extended electrical, oil-firing and timber sections are being incorporated.

LONDON WALL, between Falcon-square and St. Giles, Cripplegate, as envisaged by Lord Mottistone, FRIBA. In a letter to 'The Times' the architect points out that the ruins of the Wall, if conservatively restored and shown to their full height, 'would be an apt and rewarding prelude to the declared intention of converting the Barbican area to residential use with all the cultural and other amenities which this implies.' The drawing is by J. R. Stammers

The Story Behind a Tender

MUCH has been said and written about how big firms tender for important contracts. Aidan Crawley will show how one organisation actually did so in the last programme of the BBC Television series, 'Adventure in Industry,' on Wednesday, December 18.

A famous British firm of contractors (George Wimpey and Co., Ltd.) has put in a tender for a contract to build an extension to Malta Harbour—one of a number of tenders from many parts of the world. Crawley set out to discover how the firm arrived at a figure which would cover the costs and leave a profit and at the same time be low enough to beat all competitors. To do so, he visited Malta to see conditions on the spot and questioned the firm's directors in London.

New Harwell Laboratory Contract

A CONTRACT valued at £1 million for the construction of the main buildings of the new Rutherford high energy laboratory has been awarded to W. E. Chivers and Sons, Ltd., 34, Broadway, Westminster, SW1, by the Institute for Research in Nuclear Science.

The buildings, which were designed by the technical staff at Harwell, will house the new proton synchrotron being built for the Institute.

Professional Announcements

MR. D. G. BAINBRIDGE, ARICS, chartered quantity surveyor, has set up in practice on his own account at 1A, Middle Temple-lane, EC4.

MESSRS. ELLIS & RHODES, incorporated quantity surveyors, of Trevelyan Chambers, Boar-lane, Leeds, 1, have taken into partnership MR. R. J. EVERSON, AIQS, LIOB. In future the style of the firm will be 'MESSRS. ELLIS, RHODES & EVERSON.' The address and telephone number (Leeds 26649) will remain unchanged.

MR. PETER F. B. PRESTON, AFS, Grad ICE, has commenced in full-time private practice at 'The Butts,' Ripple, near Tewkesbury, Glos. (tel.: Upton-on-Severn 283), and would be pleased to receive trade catalogues.

FROM 'THE BUILDER' OF 1857

Saturday, December 12, 1857

HOW THEY ACT TOWARDS PROFESSIONAL MEN IN ROTHERHAM. — The election of surveyor to the Local Board at Rotherham, took place on Wednesday week, when Mr. Hartley (a mason), of Sheffield, received the appointment. There were 56 candidates, and out of them three were selected, one engineer, and two masons (one of them being also an innkeeper), all local men; so advertising was a mere farce. I am informed by a member of the Board, that the testimonials of the 53 rejected candidates were not even read by them; therefore they had their trouble and expense for their pains. I think, in strict justice, they are entitled to some compensation. I am told the present happy surveyor will not hold office long, as he cannot possibly work with the materials of which the Board is composed. I trust, in fairness to the candidates you will publish this statement. I forward you my card as a guarantee of good faith.—A LOOKER-ON.

DIRECTOR-GENERAL OF WORKS, WAR OFFICE

New Appointment Contemplated

THE Civil Service Commission invites application for the newly created post of Director-General of Works in the War Office. The post will be filled by competitive interview.

The Director-General of Works will be, together with a senior administrative civil servant, the joint head of a new organisation composed of professional, technical and administrative civilian staff which will in future be responsible for the design, planning and execution of Army Works Services at home and overseas. His task will call for qualities of vision and creative energy and for exceptional ability in the supervision of a complex and widely dispersed organisation. The salary offered is £4,250.

Applicants, who must be at least 35 years of age on January 1, 1958, should possess professional qualifications in the architectural, civil engineering or allied fields. The work of the organisation will include the design, erection and maintenance of important buildings and the preparation of large building and engineering schemes, and wide experience in these spheres is desirable.

Further particulars and application forms may be obtained from the Secretary, Civil Service Commission, Scientific Branch, 30, Old Burlington-street, London, W1, quoting DGW. Application forms should be returned by January 15 next.

COMPETITION NEWS

General Rivera Monument

NOTICE has been received from the Secretary General of the International Union of Architects of an architectural competition being promoted by a National Committee at Montevideo (Uruguay) for the design of a monument commemorating General Rivera. The conditions for the competition do not conform to the IUA Regulations for International Competitions in Architecture and Town Planning approved by UNESCO. Members and Students RIBA should not take part.

Concert Hall, Minehead

MINEHEAD UDC are recommended by their Entertainments Committee to seek the advice of the RIBA on whether the erection of a concert hall proposed to seat 400 is an appropriate subject for an architectural competition. If it is thought not to be, the RIBA is to be asked to submit names of architects in the West Country with specialist experience.

HOUSING PROGRESS REPORT

Figures for October

THE Housing Summary presented to Parliament as a White Paper jointly by the Minister of Housing and Local Government and the Secretary of State for Scotland, shows that the number of permanent houses completed in Great Britain during October was 26,395, compared with 26,782 in October, 1956. In the first ten months of 1957, 250,711 permanent houses were completed compared with 245,561 in the same period of 1956.

THE NORTHERN POLY

Prizegiving Presentation

THE annual prizegiving to the students of Building and surveying of the Northern Polytechnic, Holloway, London, N7, was held on Tuesday, December 3, with Lt.-Col. W. W. Dove, a member of the Board of Governors, in the chair.

In his report on the work of the department, MR. T. E. SCOTT, CBE, FRIBA, the Principal, said that the best report was to be seen in the craft workshops, where samples of the work produced during the year were on exhibition. The Polytechnic was proud of its association with the building industry and this was related to the quality of students which the department produced. He thanked the firms which had provided a large number of the prizes for their generosity. Mr. Scott referred to the increase in prefabrication techniques and the way in which these were adding to the difficulties of training. He was sure, however, that the well-trained craftsman could cope with anything that came his way.

After presenting the prizes, MR R. W. RICKETTS, JP, MRSH, National Vice-President, Federation of Master Builders, praised the work that this and other schools were doing in providing skilled craftsmen for the industry. He was delighted by the co-operation between the Polytechnic and the employers' organisations. He warned the students against taking jobs which offered short term prospects only and not doing the job they had been trained for. He also told them that it was not only the large contractors that offered the good jobs; the chances of advancement in small firms were often better.

A vote of thanks to the chairman and Mr. Ricketts was proposed by MR. C. P. SHARP, President of the London Association of Master Decorators.

Among the prize winners were:

PLUMBING

First Year Prize, J. Margetts; Second Year Prize, M. S. Dumont; Fourth Year Prize, T. H. Scripps; 1st Prize for Drawings and Notebook, M. J. Murphy; 2nd Prize for Drawings and Notebook, D. J. Pope; Matthew Hall—1st Prize, D. A. Hurley; Matthew Hall—2nd Prize, A. J. Smith; Prize awarded by Associated Master Plumbers and Domestic Engineers, F. J. Mason.

CARPENTRY AND JOINERY

First Year Prize, J. A. Petzing; 1st Prize for Drawings and Notebook, A. J. Potts; 2nd Prize for Drawings and Notebook, K. G. Aslett; Special Craft Prize, F. Kiteley.

BRICKWORK

First Year Prize, J. F. White; Second Year Prize, T. C. Weller; Fourth Year Prize, J. R. Ruddock; Craftwork Prize, R. I. Brown; Craftwork Prize, T. Healey.

PAINTING AND DECORATION

First Prize for Examination work, M. J. Scahill; Second Prize for Examination work, Philip Green; 1st Prize for Craftwork, J. H. Gardiner; 2nd Prize for Craftwork, R. E. Cann; National Society of Painters' Prizes, J. Shaw, F. G. Mills.

SPECIAL PRIZES

Richard Roberts Prize for Craftwork (Awarded to the student who produces the best example of Craftsmanship during the Session.) Carpentry and Joinery, B. D. Streather.

LMBA Special Award. (Awarded to the 'Best Student of the Year'), A. J. Potts.

Building for Atomic Energy

Sir John Cockcroft's Paper to the RIBA

THE question of whether the advent of nuclear power will lead to an increasing use of electrical heating of buildings was one of the subjects discussed by SIR JOHN COCKCROFT, KCB, FRS, in a paper on 'Building for Atomic Energy' presented to the RIBA on December 10. The president, Mr. Kenneth M. B. Cross, was in the chair.

On this subject, Sir John referred to an article in *The Builder* by Mr. D. Dex Harrison (October 4 last). 'The main facts of our future energy supply are already fairly clear,' he said. 'We are likely to require an additional 120 million tons of coal equivalent by 1975, and of these only 25 million tons at most are likely to be provided by increased coal output. The balance of our increased energy requirements must therefore come from increased oil imports and from nuclear energy. Under these circumstances the greater part of our electricity is likely to be generated by nuclear power stations by 1975 and more than half of our additional thermal load of about 60 million tons of coal equivalent a year will have to come from imported oil, unless some of this also can come from electrical space heating.

'We should also take note of the prediction by Sir Christopher Hinton, chairman-elect of the Electricity Generating Board, that by 1975 nuclear power generating costs should be about 70 per cent. of present costs in real money, whilst oil costs are likely to rise substantially. There will, therefore, by then be a tendency for electrical heating to be much more widely used than at present, especially when used in thermal storage systems so that the electricity can be taken at off peak periods.

'At Harwell we have used the waste heat from our BEPO reactor for heating buildings for several years. A heat exchanger is placed in the outflow of the cooling air and water is heated to a temperature of 160 deg. F. This is then distributed to heating points in surrounding buildings. By this means we save 350 tons of coal a year.

'The Swedes are conducting a more ambitious experiment to use a nuclear reactor to supply hot water at 120 deg. C. for district heating at Vasteras. The reactor will be moderated by heavy water and will supply the heat equivalent to 7,000 tons of coal a month. The Swedes believe that they can sell hot water at about the current commercial price and break even. A second reactor is being built to supply a new Stockholm suburb at Fasta with heat together with 15 megawatts of electricity. We are following their experiments with great interest.'

The Building Programme

Earlier in his paper, Sir John discussed the building work for atomic energy which had been carried out since 1946, the cost at Harwell alone amounting to some £15m., and from this part of the paper we take the following extracts:

The programme began by the conversion of the Harwell airfield of the RAF to a research establishment and the conversion of the Springfields and Sellafield munition factories to produce Uranium and Plutonium. Since then a giant diffusion plant had been built *de novo* at Capenhurst, and Research and Development establishments had been built at Aldermaston and Dounreay. The early part of this work was carried out by the architects and engineers of the Ministry of Works under the direction of Sir Charles Mole to whose indomitable energy and vision all were indebted.

'Building for atomic energy purposes,' said Sir John, 'differs from conventional building only in having to provide for protection against radioactivity whether from atomic piles or from radioactive materials in laboratories or radioactive wastes going to effluent systems or storage. Superimposed on this we had the unusual problem at Harwell of converting its 175 buildings to laboratories, workshops and other facilities. Not a single one of the RAF buildings has gone unused. As a corollary to this we have built annexes on to the existing buildings and hangars and in doing so have seen the progression of styles from Neo-Georgian brickwork to panelled prefabricated constructions with at least one example of South Bank style in the Harwell Lecture Theatre—which has turned out to be exceedingly good both for lectures and concerts and film shows.' In the office buildings the use of a module of between 10-12 ft. had evolved, suitable for a single office for juniors and providing, with two modules, adequate offices for the most senior. Offices were distinctive only by their being furnished with a blackboard convenient for office conferences, mathematics abstruse or simple, reminders of jobs and interviewing to be done. All were blackboard minded! Architecturally there had been a tendency to use a greater and greater area of glass and with that had come the use of Venetian blinds to prevent too much solar heating on those days when the sun did shine.

Laboratory Ventilation

One of the most important new buildings at Harwell had been the Radio Chemical laboratory. Its design was dominated by the fact that the chemists there worked with radioactive solutions. Some of these emitted penetrating gamma rays—so the chemists had to be shielded from them by lead walls, built up from prefabricated interlocking bricks. Other materials emitted high-speed electrons or particles. These were easily stopped by a small thickness of material but another hazard had to be guarded against. For chemists on occasions *did* spill the solutions and so the radioactivity appeared in the form of dust and could get into lungs. Ventilation of the laboratory had therefore to be extremely good and up to 200 air changes an hour were provided for. In addition to this all fume hoods had an inward air flow of up to 150 ft. per minute. To provide for this ventilation the upper floor of the laboratory was devoted mainly to ventilating ducts for incoming plenum air and outgoing air. The incoming air had to be heated and filtered and the outgoing air passed through electrostatic precipitators and filters to take out any radioactive particles.

The mildly radioactive liquid effluents from the building drained into delay or 'hold up' tanks situated in the courtyard. The drainage pipes used were fabricated from polythene or stainless steel and were carried in covered, bitumen-lined, concrete ducts. This facilitated inspection and repair of the pipes and prevented any leakage from contaminating the surrounding ground. Polythene and stainless steel had been chosen partly because of their good general chemical resistance and partly because they could be decontaminated easily.

An Unusual Building

The most recent example of buildings to house reactors were the buildings for the DIDO and PLUTO reactors. We decided to house these reactors in air tight steel buildings to act as a second line of defence against any possible escape of radioactive products from the reactors. These buildings had a leakage rate of 0.05 per cent. per day. The steel shell would withstand an excess pressure of 6.5 lb. per sq. in. A circular crane was an unusual feature of the interior. Annexes to the circular building provided offices and experimental laboratories. The two reactors were situated well below the level of the Ridgway so to some extent they were shielded from general view. 'We once asked Mr. John Betjeman what he thought of the ensemble viewed from outside and received a not unfavourable reply,' said Sir John.

A very unusual building now being constructed was the reinforced concrete building to house a giant proton synchrotron of the National Institute for Nuclear Sciences. The proton synchrotron was a magnetic racetrack for nuclear particles 150 ft. in diameter consisting of 6,000 tons of magnetic blocks. The racetrack had to sit on a surface which must depart from a plane by less than 1 mm. So a circular building 202 ft. in diameter had been designed capable of taking this heavy load and of retaining great stability. When completed the building would be covered with 10 ft. of earth to provide protection against the seven billion volt particles which will be generated.

The building design problems of the Industrial Group of the Atomic Energy Authority had been different in scale though not in kind. 'The Design and Construction Group is now led by Mr. T. L. Viney who would be much more competent to describe the work than I am, so naturally I have received help from him,' said Sir John.

The most recent of the Establishments built *de novo* was at Dounreay. It had been built to house experimental and prototype reactors with their associated chemical processing plants. The central object in the landscape was the huge 135 ft. diameter sphere housing the fast breeder reactor. The object of the reactor experiment is to establish the principle of breeding fissile material such as Plutonium from a material such as the abundant Uranium 238 or Thorium. So

the reactor had a core of fissile material—about 2 ft. in diameter and 2 ft. high, in which the equivalent of 60 megawatts of heat would be generated by the chain reaction in U 235 or plutonium. The sphere and associated buildings had been designed as a whole and made a very interesting group, enhancing the interest of the landscape rather than spoiling it.

The concrete shield surrounding atomic piles to absorb gamma rays and neutrons was a special feature of their construction. A concrete density specification of 150 lb. was achieved by the use of whinstone aggregate. In some reactors the use of barytes and steel shot as aggregate gave greater densities in the concrete and this had reduced the thickness. Shrinkage cracks were avoided by low water/cement ratios, and vibration and steam curing methods had been used. These shields were often pierced with tubes required for experimental purposes and these had to be located with great accuracy.

'There has been a great deal of public debate on the siting of nuclear power stations,' Sir John continued.

'Since they have outputs of up to 500 megawatts they require increasing amounts of cooling water for condensing the steam—just as conventional stations do. So they must be sited on large rivers or estuaries or the coast. The sites must have good foundations to support the great reactor loads, and the site must not be too high above sea level. In addition the Government have added the requirement that they should, for the time being, not be too near towns until we have more experience of their operation.

'If the site selector puts all these criteria on a map he is left with a limited range of sites. So it is obviously good policy to develop as much power as possible or convenient from the chosen system on any good site. Within these limitations the designer has to do his best with architectural advice to fit the power station into the landscape by taking advantage of the undulating features of the terrain. But he does not have much scope on the Essex flats or the Severn meadows.'

SURREY SCHOOL BUILDING

Plans Approved

SURREY EDUCATION COMMITTEE have approved sketch plans and estimates submitted by their education development committee for a number of school projects to be undertaken as part of the agreed building programme.

Included in these was the first stage of the redevelopment scheme for the Guildford Royal Grammar School, comprising new buildings to provide four classrooms, six practical rooms, a temporary cloakroom and sanitary offices at a cost of £68,052, in lieu of the sum of £63,602 which was authorised last year.

Provision of £12,798 for the building of elementary and advanced chemistry laboratories and conversion of the existing chemistry laboratory for advanced physics is to be made for the Woking County Boys' School. At Tiffin Boys' School, Kingston, the sum of £16,474 for laboratories is allowed, and £19,920 for the same purpose at Strode's School, Egham.

Because of the Ministry's circular, the minor building programme, with the exception of movable classrooms, will have to be reviewed. The Committee agreed as a matter of urgency to approve a programme of movable classrooms involving an estimated total expenditure of £64,000.

DISTRICT HEATING

MoW Scheme at South Kensington

ONE of the largest district heating schemes in the country is being developed by the Ministry of Works at South Kensington. All the museums and other Government property in the area—about 20 buildings altogether—are being connected to a new boiler house in the basement of a nine-storey block under construction for the Natural History Museum. When the boiler house is fully developed it will also heat the existing and the enlarged Imperial College of Science which is planned for South Kensington.

The new heating system is costing about £414,000 and will lead to substantial savings in fuel and labour. It is smokeless and largely automatic, needing only two men a shift to operate it.

About 12 major boiler plants and other minor plants—all now obsolete and inefficient—will be scrapped. In place of these old systems hot water heating is now being installed with partial air conditioning and mechanical ventilation in many parts of the museums where close control of temperature and humidity is necessary for the proper care of the priceless exhibits and specimens.

When the new plant is completed it will have four boilers capable of distributing 160m. BTUs an hour. Two boilers are already operating, a third is now being installed and a fourth will be added when new building in the area makes it necessary.

The boilers burn coal tar fuel—a home produced liquid fuel with a low sulphur content which under normal conditions does not produce smoke. Apparatus fitted in the chimneys will give warning in the boiler house if smoke is being produced, so that the fault can be corrected.

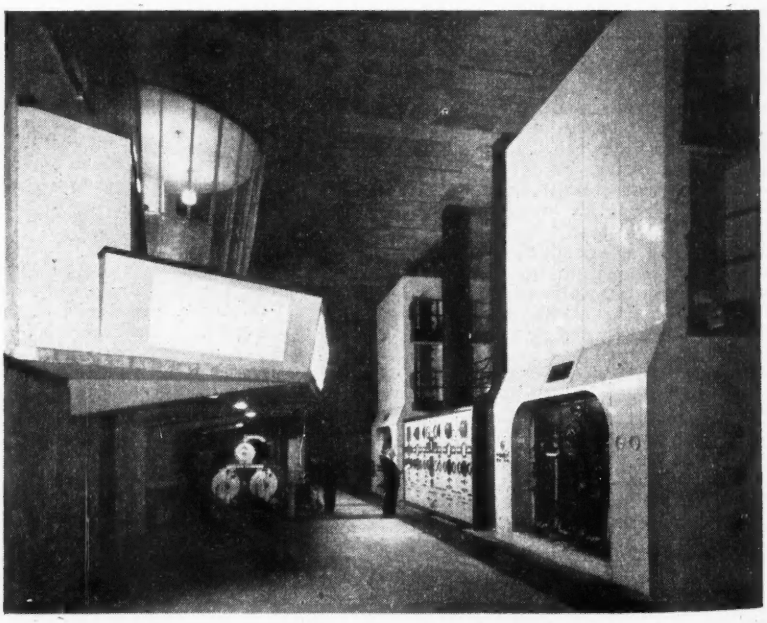
In many buildings it has been possible to use or to adapt the pipes and heating distribution systems already there. Medium pressure hot water is supplied to the old and the new installations, some through calorifiers to low temperature systems and some through heater batteries at full mains temperature. A novel injection method has been used in some buildings to blend high temperature hot water into low temperature systems. Thermostatic control is applied throughout.

Three-and-a-half miles of piping of diameters up to 10 in. have already been laid to link the buildings with the boiler house and ultimately more than five miles of pipes will be laid. Distribution mains have been taken through new and existing tunnels under buildings and roadways, crossing Prince Consort-road, Imperial Institute-road and Exhibition-road.

Two chimneys of the old Natural History building, 190 ft. high, have been adapted and re-lined to serve the new plant.

When the scheme is complete, it will become a working exhibit of the Science Museum. A corridor links the museum to the boiler house and a platform has been built at high level for visitors to see the plant in action.

The boiler plant installation is by Lemont Steam Generator, Ltd., and the mains distribution has been installed by G. N. Haden and Sons, Ltd. All the designs were prepared by the Chief Mechanical and Electrical Engineer's Division of the Ministry of Works, which has also been responsible for supervising the direction of the work.



SOUTH KENSINGTON DISTRICT HEATING SCHEME.—Two of the boilers in the new boiler house with the viewing platform on the left. (MoW photograph, Crown Copyright Reserved)

BOOKS

∴ Books reviewed in these columns may be obtained on application to the Book Dept., 'The Builder,' 4, Catherine-street, Aldwych, WC2. Cash (which should include 1s. to cover postage and packing) should accompany the order.

THE WORKS OF PIER LUIGI NERVI. (London: The Architectural Press.) Price 56s. net.

OWING, no doubt, to our preoccupation with the problems of national survival before, during and after the Second World War, Pier Luigi Nervi was not particularly well known in this country until an exhibition of his work, organised by the Cement and Concrete Association, was held in London a year or two ago, when it was at once realized that here was a constructor of genius. A book about him and his work was clearly called for. This is now provided, and in its illustrations, if not in format and text, it fulfils expectations. Nervi himself contributes a brief preface and there is a rather inadequate introduction by Ernesto N. Rogers. Some 42 examples of Nervi's executed and projected works are shown by a great number of illustrations—photographs, perspectives and technical drawings—with brief explanatory notes by Jürgen Joedicke, translated by Ernst Priefert.

Nervi has certainly made a great impression in this country, not only because of the originality and beauty of his works, but because he unites in himself the functions of architect, engineer and contractor, and has obtained most of his commissions in keen competition with commercial rivals. In Nervi a brilliant creative imagination unites with a constructive genius and business ability, matched in our own time perhaps only by Perret, Maillart and Freyssinet.

He excels particularly in the enclosure of great spaces under a single roof, as, for example, in the principal Exhibition Hall at Turin, with its immense segmental roof of corrugated prefabricated elements; the great hangar at Orvieto, with its vaulted roof supported by diagonally intersecting beams; or the storehouse for salt at Tortona of somewhat similar construction; or again, in the design of great sports stadia as, for example, the Municipal Stadium at Florence (seating capacity 35,000)—a work wholly of reinforced concrete, with grandstands having immense cantilevered roofs and external semi-helical staircases cantilevered out from an inner spiral beam—works of daring construction and almost fantastic functional beauty. Many buildings less ambitious in scale, but no less original in design, are also illustrated, including the UNESCO Building in Paris, in the design of which Nervi has collaborated with Marcel Breuer and Bernard Zehrfuss.

In a sense, Nervi provides a parallel with the great British constructors of the early nineteenth century, many of whom were both architects and engineers and sometimes their own contractors. Is he a portent? Genius of his order is rare, but his achievement points a moral for ourselves—the need for greater unification of creative effort.

The introductory text to this book, though good enough as far as it goes, is inadequate to the subject. Nervi's contribution is chiefly valuable for the declaration of his belief in the inherent aesthetic force of a good structural solution and his conviction that two of his most interesting works—the hangars built of precast elements and the roof of the Turin Exhibition Halls—would have been impossible without a simultaneous invention of the structural method. Ernesto Rogers's 'portrait' of Nervi is little more than a philosophical essay on design.

Notwithstanding the quality of its production, this is far from being physically a perfect book. Its chief fault is in having the spine on the short dimension, which makes it awkward to handle. The type is timid and difficult to read; it could well have been bolder and ampler, for there is an overgenerous proportion of virgin space that simply aches to be filled. It is a pity that productive 'cleverness' spoils so many otherwise good books to-day. This one was printed in Germany, so perhaps the publishers are not wholly to blame.

GARDENS OF JAPAN. By Tetsuro Yoshida. (London: The Architectural Press.) Price 63s. net.

IN this book Mr. Tetsuro Yoshida follows up his work on The Japanese House and Garden with a full-scale study of Japanese gardens. (The text is translated from the German by Marcus G. Sims.) The Japanese garden, like the Chinese, is 'landscape,' no other form apparently ever having been cultivated. It has, says Mr. Yoshida, 'numerous characteristics and definite, constantly recurring forms and details which have developed gradually under the influence of tradition, of geographical circumstances, and of historical events.' These, he describes in four introductory chapters, illustrated by numerous photographs, garden plans, and other technical drawings—of buildings, ornamental features and other details.

There are three types of Japanese garden—the landscape garden with a lake and a hill; the level garden; and the tea garden, and all three are fully and beautifully represented by means of 100 or more full-page photographic illustrations, finely reproduced, four of them in colour. (The book was printed in Germany). The variety of effects achieved is astonishing, ranging from the strange austerity of the sand garden (representing water), with its scattered 'islands' of large stones, to the picturesque elaboration of the tea garden, with its pools, bridges, stepping stones, paved paths, lanterns, ornaments, trees and enveloping foliage, the buildings, where they occur, seeming to arise naturally from their settings.

These seem to be enchanted gardens, solitudes not to be encroached upon by human beings, of whom, indeed, except in one minor view, there is no trace. The Japanese designers, we are told, are preoccupied with the pursuit of a harmony between man and nature. A discreet human figure or two would have provided ocular evidence of this ideal or at least served to give needed scale to some of the views. Technically, however, no praise is too high for these photographs. This is a beautiful book, providing a wealth of suggestions for any occidental garden designer in need of fresh ideas.

G. J. HOWLING.

OBITUARY

E. J. Liddle, LRIBA

WE regret to announce the death in the recent railway disaster of Mr. Edwin J. Liddle, LRIBA, Bramley Farm House, Pembury, Kent. He was 57.

A. S. Payne

THE death occurred on November 28, of Mr. A. S. Payne, FIAS, a partner in A. E. Thornton-Firkin & Partners, Quantity Surveyors. Mr. Payne commenced his career with George Corduroy & Co. and later joined Langdon, Every & Firkin in 1943.

Ald. F. W. Shepherd, FIOB

THE death has occurred at the age of 72 at his home at Dringhouses Manor of Ald. Frederick Welton Shepherd, FIOB, a former Sheriff of York and for many years a member of the city council. He was head of F. Shepherd and Son, the York builders.

Ald. Shepherd was a past-president of both the York Building Trades Employers' Association and the Yorkshire Federation of the Association. He was a member of the Regional Conciliatory Board for the building industry and of the Regional Advisory Committee which was set up by the Ministry of Works. He was also county leader of the Emergency Works Organisation under that Ministry to plan rebuilding of damaged property in London.

As one of the two provincial builders on the DSIR Research Board he gained much experience in housing matters.

DIRECT LABOUR, WOLVERHAMPTON

Effects of Minister's Decision on Competitive Tendering

WOLVERHAMPTON Housing Committee are to discuss a Government decision that the Town Council must not accept any further contracts for its direct building department unless they have been put out for competitive tender.

A direct labour contract for 132 houses, costing £165,413, on the Willenhall North Estate has been approved by Mr. Henry Brooke, Minister of Housing and Local Government, but in a letter to Mr. J. Enoch Powell, MP for South-West Wolverhampton and Financial Secretary to the Treasury, he says he will warn the Council that he cannot consider further loan sanction applications without competitive tenders.

Conservative members of the Council, at the October meeting, strongly opposed acceptance of the tender, and subsequently Mr. Powell took the matter up with Mr. Brooke on behalf of Wolverhampton and District Building Trades Employers' Association.

Commenting on the Minister's decision, CLLR. P. E. MORRELL, leader of the Conservative group on the Council, said: 'We feel we have not been getting the support we should have had from the Government on this issue. Private building contractors are only too willing and anxious to be allowed to submit tenders for work which is being allocated to the Council's direct building department. The Socialist group, having created a direct building department, believes it must keep it going without regard to costs.

'Design and Detailing of Screen Walls'

Mr. Markus's Lecture to the Brixton School

THE third lecture in the series on the Design and Detailing of Screen Walls, arranged by the LCC Brixton School of Building, was given by Mr. T. A. Markus, MA, ARIBA, on November 14, at the Building Centre.

Screen and curtain walls, said MR. MARKUS, offered very much greater opportunity than walls of traditional form to control, even exploit, external conditions. The limitations imposed on loadbearing building enclosures by their primary function of support, when compared with the potentialities of screen walls, could be regarded as analogous to the inherent limitations of the external supporting shell skeletons of animals such as crabs when compared with the multiple functions and capacity for specialisation of the skin of higher animals.

'Screen walls,' said the lecturer, 'should be regarded not merely as barriers but as filters capable of selective control over the influences of external conditions on the building's interior. The dominance of glass areas in such walls demands consideration of its influence on a number of aspects of performance — lighting, heating, fire prevention, control of moisture, etc. In giving this, however, it is important to remember that the opaque and transparent areas of the wall cannot satisfactorily be considered apart from each other.' The traditional functions of windows were to admit light, allow vision and to provide natural ventilation; and problems of glare, lack of sound insulation, loss of heat and air condensation had always been associated with them. These problems existed in exaggerated form in curtain wall construction.

Control of Daylighting

Computation of daylighting was a very complex undertaking, and if carried out accurately, estimated amounts of light received at given points must include light received after reflection by both external and internal surfaces as well as light received directly. Assessment of reflected light usually involved the construction of scale models. Of the protractors and similar methods currently used in assessing simple sky factors, i.e., direct light only, one type only was available to take any account of the angle of incidence of light on the glass. Steep angles of incidence, common when buildings were high and closely spaced, reduced transmission, and penetration into the building was correspondingly small. Light received at a building's face could be redirected to increase penetration, and diffused to reduce glare, by using glass of the right type.

Glare was a very real problem because the positions of the room occupants were so often fixed; it could be countered in other ways than by diffusion—by sun breaks, overhangs, blinds. More recently, a building section similar to that developed by the Nuffield Research Foundation to give optimum daylighting in hospitals had been applied to multi-storey office design.

Control of Solar Energy

Mr. Markus continued:

A large part of the energy radiated by the sun is invisible—the ultra-violet and infra-red sections of the spectrum. The energy of all sections, if absorbed, produces heat. The familiar 'greenhouse' effect results from transmission of this energy through glass and its absorption by internal surfaces, which then emit it as heat of longer wave lengths to which glass is opaque, and heat builds up inside the building. A number of tinted glasses are available which are capable of selective transmission. Some reduce transmission more in the visible parts of the spectrum — e.g., 'Ambulance' glass — while others reduce transmission of all parts of the spectrum. Heat-absorbing glasses are available which are able to cut out as much as 66 per cent. of the heat energy of solar radiation, whilst still transmitting the visible parts of the spectrum. The high absorption of red and yellow light gives these a characteristic greenish light.

Absorption of solar energy by building surfaces is not a complete solution to the problem of excessive heat entry through curtain walls. Heat is also transmitted by framing members, and both opaque and transparent panels, when warmed, transmit heat from their interior surfaces by both radiation and convection. This action in reverse results in heat loss from the building. This 'radiator' action of absorbent glass when used in panels can be alleviated by introducing a ventilated air space behind it, and, when used in windows, by double-glazing in which an inner leaf of plain glass shields the interior from the long wave length heat radiations from the outer leaf.

Precautions are also necessary to prevent fracture of glass panels by variations of stress caused by variations in surface temperature. These arise when panel edges are shielded by the overlap of fixing beads. The effect is intensified when panel edges are backed by insulating materials. Tests show that edge tension increases with width of edge cover to a maximum at 1 in. to 1¼ in. Retaining beads should be limited to ⅜ in. maximum width to keep edge stresses within safe limits. Wired glass, because of minute local crushings of the glass by the wires during cutting, is more vulnerable to this form of failure. Limitation of edge overlap as described above is an adequate precaution in the case of translucent material, but if backed by insulation or if opaque coloured glass is used, a ventilated cavity is also desirable to reduce temperature. Cavities with vents at top and bottom are best.

Glass with a fused coloured backing which is covered with a film of aluminium is a standard product in America. Heat absorbed by the glass is radiated in smaller quantity from its inner surface because of the low emissivity of the aluminium. The glass used is toughened to withstand stresses arising from the resulting higher temperatures.

Thermal Insulation

Relative to the need to prevent heat loss from buildings, the practice of using windows with single glazing in conjunction with expensive insulating panel fillings is economically unsound but quite common. Here is the comparison:

Window area single-glazed: If 'U' value of window is taken as 1.00 and of the panel 1.40 (i.e., as low a value as may reasonably be assured) the average overall 'U' value will be .82. If effort is expended to increase the 'U' value of the panel to .2 (100 per cent.), the overall average is only raised to .76—an improvement of 9 per cent.

Window area double-glazed: If 'U' value of window is taken as .50 and of panel as .40 as before, the overall average is .47. If effort is expended to increase the 'U' value to .2 (100 per cent.), the average is raised to .41—an improvement of 15 per cent.

Four types of double-glazing are in common use:

1. Glazing units in which two sheets of glass are hermetically sealed to an edge separator to contain dried air.
2. Double patent glazing—limited in application because of dirt penetration and condensation on inner surfaces.
3. Double windows.
4. Single glazing modified by the addition of a second sheet of glass held in place by beads or extruded edge channels. (Cleaning needs make periodic removal necessary.)

Information regarding the value of double glazing is by no means comprehensive. 'U' values can be assessed when wind speeds are known, but these vary; solar radiation also causes major variations. Recent BRS tests show a 100 per cent. noon-midnight variation in the 'U' value of window-wall with a northern exposure. Currently used figures may well overestimate the heat losses through double-glazing; and the use of a series of values for application at different times may eventually be resorted to. Loss of heat through framing members is of sufficient magnitude to warrant attention.

Problems of Condensation

Insulating membranes, usually porous materials, raise problems of condensation. The capacity of air to carry water vapour is greater when the air is warm. Internally warmed air can thus carry water vapour through warm porous linings, but has to deposit it when cooled by contact with cool outer linings. Draining of cavities, by gaps in bottom panel edgings and transom weep holes or the provision of internal vapour-proof barriers are typical solutions to this problem. Vapour barriers are easy to apply to linings, but vapour-resistant joints between them and framing members are extremely difficult to achieve. Lacking these, insulation may suffer deterioration or loss of efficiency from wetting.

Adequate ventilation of cavities will

eliminate condensation as well as preventing heat build up in panels. If double glass units are used for external surfaces (e.g., Plyglass), their inner surfaces remain warm enough to reduce condensation.

Other points made by Mr. Markus were:

Fire Resistance: The reluctance of many authorities to consider panel fillings capable of providing fire resistance unless attached directly to the main structure (early buckling of supporting framing can cause premature collapse of the whole wall and dropping out of panels) makes the use of expensive F/R panel forms illogical in many instances—a second F/R barrier behind the curtain wall is generally required.

Sound Insulation: Areas of single glazing are again weak spots. Although some small improvement can be effected by well fitting opening lights and the use of heavy glass, the only satisfactory way of providing a reasonable standard is to use widely separated 4 in.-8 in. double glazing.

Jointing: The limitations of many mastics are now recognised. Dry jointing techniques have in many cases proved satisfactory and other methods and materials are being developed and applied with success.

Future Trends

A number of future developments were envisaged by Mr. Markus:

1. The early use of multi-purpose glass. He referred to one in non-building use which by means of a metallic bloom on its surface reflected the major part of the infra-red spectrum whilst preserving high transmission of the visible section of the spectrum.

2. The possible elimination of frame members—panels jointed and supported by means of rigid edgings.

3. The collection of solar energy at a building's surface, by liquid or gas-filled coils behind an opaque glass, for transfer to storage for later use. The problem here was the large surface area needed to make the method effective.

OFFICIAL NOTIFICATION

Disposal of Lead Stocks

THE Board of Trade announced on October 11 that they intended to dispose of their remaining stocks of lead amounting to about 20,000 tons. Discussions have been held with the interests concerned about the rate of disposal. The Board invited tenders on December 4 for the first 7,200 tons for delivery and pricing from January 1, 1958, at a rate of 1,200 tons a month. Of this, about 1,900 tons will be offered for sale by open competitive tender, and the remainder will be offered to the original suppliers or their agents.

Tender forms are obtainable from Board of Trade, G7A, Room 316, Lacon House, Theobalds-road, WC1.

Modular Catalogue

The Modular Society, Limited, have issued sheets 33 and 34 of The Modular Catalogue. These are on 'Aluminium Windows' and 'Lighting Equipment.' The catalogue sheets are issued serially to members of the Society.

IN PARLIAMENT

By Our Parliamentary Correspondent

Housing and the Government's Monetary Policy

THE Opposition are still trying hard to pin the Minister of Housing down to some more specific estimates of the fall in house building by local authorities because of the Government's monetary policy, but MR. BROOKE is equally determined not to be drawn into going further than the broad general statements he has made to the House of Commons recently.

Indeed, on December 3 he repeated his comment of November 11 that his aim in the financial year 1959-60 was that local authorities and new town corporations in England and Wales would complete 100,000 houses.

He had been asked by MR. AWBERY to what extent he estimated that the number of houses built in 1956 by local authorities would be diminished when they operated fully the Ministerial circular asking them to reduce expenditure on housing by 20 per cent. Mr. Awbery also asked for the average cut in expenditure which had been made by those authorities before the circular was sent out.

MR. BROOKE replied that by the time the circular had been issued many authorities were already reviewing their housing programmes in the light of higher interest rates, but the interval was too short for any general conclusion to be based on the one without the other.

MR. ARTHUR LEWIS asked the Minister if he would take action to collate from local authorities details of those local authorities who were within sight of satisfying their local housing need; and if he would publish the results of such investigations.

MR. BROOKE: No. Every local housing authority has its statutory responsibilities, and the number of houses that each one has under construction or in approved tenders is already collected and published every three months in the housing returns.

MR. FINCH asked the Minister whether he would consider extending the annual subsidy of £10 to cover an agreed percentage of two-bedroomed houses, provided they were erected on the same site as the one-bedroomed type to form part of the same scheme.

MR. BROOKE: No, and in any case this could not be done without legislation.

Improvement Grants

MR. HURD asked the Minister what advice he had given local authorities about continuing the improvement grants for the modernisation of farm cottages and similar property; and if he expected the amount of work done to be maintained in the coming year.

MR. BROOKE: I think this is a matter which must be left to local authorities to determine for themselves when they consider how best to make provision, in present circumstances, for the various housing needs of their areas. I have recently drawn their attention to the importance of making grants for schemes of conversion which will produce additional accommodation. At this stage I can make no estimate of the likely volume of improvement work next year.

Welsh Development Plans

MR. PROBERT asked the Minister of Housing and Local Government how many of the development plans which had been submitted to him in accordance with Part II of the Town and Country Planning Act, 1947, from planning authorities in Wales and Monmouthshire had been approved; and how many were awaiting approval. He also asked how many development plans had been submitted to him in accordance with Part II of the Town and Country Planning Act, 1947, from planning authorities in Wales and Monmouthshire.

MR. BROOKE: Eighteen development plans have been submitted by local planning authorities in Wales and Monmouthshire. Seven have been approved and eleven are awaiting approval.

The Roads Programme

THE Minister of Transport rejects the idea that he should invite one or more Continental traffic engineers with experience in planning of under-passes to relieve traffic congestion to give their views about the proposed under-passes between Piccadilly and Knightsbridge which are designed to carry one lane of traffic.

He informed MR. ERNEST DAVIES, in a written reply on December 4, that he is satisfied that British technical advice is more likely to provide the right solution for British traffic problems.

MR. WATKINSON also told Mr. Davies that the conclusions of the recent conference on British highways which was called by the Institution of Civil Engineers were being examined by the department. He did not necessarily accept those conclusions.

MR. DAVIES had asked if his attention had been drawn to the conclusion that an annual expenditure of about £350m. would be incurred on new road construction and major improvement works for the next 10 years if British roads were to be adequate for the probable traffic at the end of that period. He wanted the Minister to arrange for the department's planning staff to consider this matter, so that an early statement could be made about the intentions for dealing with it.

Dartford Tunnel Progress

MR. PARKER asked the Minister of Transport what progress had been made in the building of the Purfleet-Dartford Tunnel and its approach roads.

MR. NUGENT, Parliamentary Secretary, Ministry of Transport, in a written reply on December 4, stated: Tunnelling has started on both sides of the river, and the shields have been driven for over 100 yards. Steady progress is being made with the approach road on the Kent side, and the ground is being levelled on the Essex side.

More Money for Hospitals

EXPENDITURE on capital development in the hospital service is to be increased from £18m this year and £20m next year to £22m in 1959-60, subject to the necessary approval being received from Parliament.

This was announced in a written reply on December 6 by MR. DEREK WALKER-SMITH, Minister of Health.

He said that hospital boards were being informed of their individual allocations within that total for the modernisation of

mental hospitals, the replacement of obsolete plant and ordinary capital expenditure. In addition, the programme of major building projects announced by his predecessors would be continued and expanded.

As had been stated in the House on July 1, 1955, the original programme, to encourage speedy action, included more projects than it would be possible to start in the years to which it was allocated. Projects already in the programme, but not started, and the second phases of some of those for which only the first phases had so far been authorised, were likely to make a considerable claim on the capital available for 1959-60. He had invited boards to bring to completion the planning of a number of additional major projects, and hoped that all boards would endeavour to complete the planning early in 1959-60.

The Minister outlined the projects which had been selected. They include the first phase of new hospitals to be built at Liverpool and Boston, and the second phase of a number of large schemes already in the programme, such as the new hospitals at Huddersfield, Swansea and Swindon; the mental deficiency hospital at Llanfrechfa Grange, near Newport; the development of the Downs Hospital, Sutton, as a medical nuclear physics centre; and the provision of a new X-ray department and theatres at Lewisham Hospital, where the first stage of development is now nearing completion.

There are new out-patient departments for the Dudley Road Hospital at Birmingham, the Chester Royal Infirmary and the North Staffordshire Royal Infirmary, Stoke-on-Trent; an out-patient department and admission unit to serve the Hollymoor and Rubery Hill mental hospitals; and an admission unit and convalescent villas at the Garlands mental hospital, Carlisle.

A new regional neuro-surgical unit is included for the Newcastle General Hospital. Extensions are proposed at the Pontefract General Infirmary, Sharoe Green Hospital at Preston, the Blackpool Victoria Hospital, Blackburn Royal Infirmary, and Bronglaise Hospital, Aberystwyth; and works of modernisation are included for St. James's Hospital, King's Lynn; the City Hospital, Exeter; St. Lawrence's Mental Hospital, Bodmin; and Hope Hospital, Salford.

Among the projects are a new boiler house for the Manchester Royal Infirmary and some improvements at the City General Hospital, Sheffield.

He is also asking for plans to be prepared for the first phase of some hospital development in Hull, and for additional beds at Ilford or Barking, but details of these two schemes have yet to be worked out with the boards concerned.

OTHER BUSINESS

Her Majesty's Theatre

MR. KENNETH ROBINSON asked the Minister of Housing and Local Government, on December 3, to what extent Her Majesty's Theatre would be affected by the redevelopment of the Carlton Hotel site; whether any application for planning permission involving the theatre had yet reached him in accordance with the undertaking given by his predecessor concerning the preservation of London theatres; and if he would give an assurance that Her Majesty's would be preserved as a theatre.

MR. BROOKE: The theatre will not be affected by the present redevelopment of the Carlton Hotel site. Under present arrangements I understand that the New Zealand Government hope to obtain possession of the theatre site in 1970 when the current lease expires, but so far as I am aware no plans have yet been formulated for any developments thereafter.

Historic Buildings

MR. ROBERT COOKE asked the Minister of Housing and Local Government, on December 3, how many notices had been received under Section 30 of the Town and Country Planning Act, 1947, involving demolitions of buildings; how many buildings were involved since January 1956; how many of those buildings fell within his department's categories Grade II and Grade I; and how many buildings were preserved as the result of his using his default powers under section 100(2).

MR. BROOKE: 938 notices have been received since July 1, 1951. Notices received since January 1, 1956, affected 436 buildings, of which four are in Grade I; I cannot give a precise figure for the number in Grade II. Twenty-three buildings are covered by preservation orders made by my predecessors or myself.

Famagusta Harbour Project

MR. PAUL WILLIAMS asked the Secretary of State for the Colonies for a statement on the progress being made for providing a deep-water port in Cyprus.

MR. PROFUMO, Under Secretary Colonial Office, replying on December 3, said: The plans and specification for extension of Famagusta harbour are now well advanced, but substantial details have still to be settled before tenders can be invited.

Rural Schools Required

MR. DYE asked the Minister of Education what was the number of new schools he estimated would be required to complete the reorganisation of education in rural areas and what was their expected cost at present building prices.

SIR EDWARD BOYLE, Parliamentary Secretary, Ministry of Education, replying on December 5, said: One hundred and forty-two, at an estimated cost of about £15m.

MR. MOSS asked the Minister what estimate he had formed how educational expenditure was likely to vary over the next few years.

SIR E. BOYLE: I expect educational expenditure to continue to increase over the next few years.

MR. BROCKWAY asked the Minister what proposals the Government had for increasing the estimated expenditure on education during the present financial year.

SIR E. BOYLE: The Ministry's vote for the current year is £33m larger than last year's.

Points from Other Replies

Colliery Spoil Heaps.—A survey is being made of a number of spoil heaps to see what measures might be taken to improve their appearance and usefulness. This has not yet been completed. (Minister of Housing and Local Government, December 3.)

New Birmingham Dental Hospital.—I am not yet able to say when it is proposed to commence building the new dental hospital in Birmingham; and when the building is likely to be completed. (Minister of Health, December 2.)

Barking by-pass.—I expect construction to start next month to complete the double carriageway on the Barking by-pass through East Ham and West Ham. (Parliamentary Secretary, Ministry of Transport, December 4.)

LMBA

National Contractors' Group

MR. W. KIRBY LAING, president of the LMBA, presided at a luncheon in the Dorchester to mark the creation of the LMBA's National Contractors' Group, which is to come into existence formally at the Association's annual general meeting on January 21. The group consists of members whose work is not normally confined to London. Over 120 members attended.

Welcoming the formation of the group, the president said that its establishment marked another important step in the LMBA's policy of ensuring proper representation of all classes of its members. There were some problems which were common to all builders. Some affected the big builders only, some affected the small builders. They had long had a Maintenance Builders' Committee, and it had done yeoman service in helping to solve the problems of the small builder. They anticipated equally great things from the National Contractors' Group, but it depended for its success on the loyal support of all its members. He hoped that would be forthcoming.

The first general meeting of the group is to be held on January 16. Meanwhile, a small committee under the chairmanship of Mr. A. R. Mais, of Trollope and Colls, with Sir Godfrey Mitchell, Mr. W. K. Laing, Mr. K. P. Rush and Mr. Peter Trench as its other members, is drawing up rules for the working of the group.

Christmas Vacancies for Apprentices

THE ASSOCIATION has circularised its members asking them to find vacancies for boys leaving school this Christmas who wish to become apprentices in the building industry. Should any boys appear to be suitable for attendance at a full-time one-year's pre-apprenticeship course at a technical college before entering employment, such courses are available at: (a) Building Department, Bromley School of Art; (b) Building Department, Erith Technical College; (c) Ewell Technical College.

Annual Meeting

THE MINISTER of Housing and Local Government, the Right Hon. Henry Brooke, MP, is to be the guest of honour of the LMBA at a luncheon in the Park Lane Hotel on January 21 before the Association's annual general meeting.

Luncheon to Lord Mayor

THE LORD MAYOR, Alderman Sir Denis Truscott, has accepted the invitation of the Council of the LMBA to take luncheon with its members on May 9, 1958, in the Savoy Hotel.

LAW REPORT

'Additional Costs' Claim Fails

Henry Boot and Sons, Ltd. v. London County Council. Queen's Bench Division before Mr. Justice Pilcher.

MR. JUSTICE PILCHER, in the Queen's Bench Division on November 29, decided that the London CC were not liable to pay to contractors, who built three blocks of flats for them, additional costs incurred by the rise in the contractors' contributions to the schemes by which their workmen are paid for annual and public holidays.

The contractors had contended that the contributions should be held to be included under a 'rise and fall' clause in standard LCC contracts which provided that any increase in wages during the currency of the work should be recoverable by the contractors against the council, or that any decrease in wages should be allowed by the contractors in the council's favour.

A total of £1,101 was claimed by the contractors, Henry Boot and Sons, Ltd., as representing the amount their costs in carrying out the contract work were increased by the higher holiday contributions. The Judge dismissed the claims, and awarded costs to the LCC. He had earlier been told by counsel for the contractors that the case was a 'novel one on which other cases may depend.'

Mr. R. D. Stewart-Brown, QC, and Mr. D. H. Gardam (instructed by Messrs. Masons) appeared for the contractors; Mr. Michael Hoare (instructed by Mr. J. G. Barr. the LCC Solicitor) represented defendant council.

Judgment

Giving judgment, MR. JUSTICE PILCHER said the contractors had started an action against the council to recover the additional contributions in April this year. The parties had agreed to state a special case for the opinion of the High Court, which was now before him.

The contract between plaintiff contractors and the council was on the council's standard form of contract. Clause 23(A) provided: 'If during the currency of this contract the rates of wages payable for any labour employed in the execution of the works shall, in conformity with agreements between associations of employers and trade unions, or with the decisions of a competent authority, be increased above or decreased below the corresponding rates in force at the date of the contractor's tender . . . and the increase or decrease shall result in an increase or decrease of the costs of the contractor in carrying out the work, then an allowance equivalent to the net increase or decrease of cost . . . shall form an addition to or reduction from the amount otherwise payable under the contract and be paid to or allowed by the contractor accordingly. . . .'

The contractors tendered to the council on December 17, 1951. Clause 27 of the contract provided that the contractor should pay rates of wages and observe hours and conditions of labour not less favourable than conditions generally established for the industry in the district in which the work was carried out.

Clause 59 provided: 'The contractor shall be paid in respect of day work ordered by the architect at the rates of wages actually and properly paid to the persons employed on such work, but not exceeding the rates which at the time of the execution of the work have been established . . . for the trade or industry in the district . . . with the addition thereto of the first percentage inserted by the contractor in his tender or quotation (namely 15 per cent.) to cover supervision, the use of plant, machinery, profit, employers' contributions to National Insurance, payments for holiday wages and all contingencies.'

'Now the difference which has arisen between the parties is this;' said the Judge. 'The council take the view that clause 23(A), which is called the rise and fall clause, applies only to wages proper. The contractors contended that the words ("rates of wages") in that clause included payments made by the contractor under the Annual Holidays with Pay Scheme and the Public Holidays Scheme which have been instituted in the building, civil engineering and contracting industry.'

His Lordship said that during the course of the contract work undertaken by plaintiffs, contributions which they had to pay for the benefit of their employees under these two schemes increased quite considerably. The amount of these increases was represented by the £896 which plaintiffs claimed in respect of the annual holidays scheme, and £215 claimed for the public holiday scheme increases.

Before the agreements were entered into between the parties, continued his Lordship, the Clerk to the LCC had written on January 14, 1949, to the secretary of the London Master Builders' Association that consideration had been given to the need for the retention of the 'up and down' clause in the council's civil engineering and building contracts. Hitherto the clause had covered increases in wage rates, national insurance, holiday pay, etc., but in future the scope of the clause was modified and would only normally provide for variations in wage rates and in prices of a limited range of designated main materials. Plaintiffs, as members of the Association, were informed of the contents of that letter. The Association had replied that they could not accept the LCC's proposal. In November, 1949, the council replied that they were not prepared to depart from their decision.

In November, 1951, there was a letter from the LCC to Messrs. Henry Boot and Sons, relating to another contract, which stated that under clause 23(A) increases in the cost of holiday pay stamps were not allowable. Plaintiffs continued to submit claims in respect of such increase, but the council rejected them.

A Difficult Decision

Mr. Justice Pilcher said it had been contended before him on behalf of plaintiffs that the words in clause 23(A)—'rates of wages payable for any labour employed in the execution of the works'—were really quite unambiguous, and as, under national agreements, the contractors had to make the holiday scheme payments, such payments were in effect part of the man's wages.

'The case has been very carefully argued before me, and I confess I have not found it entirely easy to make up my mind,' said the Judge. For the LCC it had been submitted that if the words were ambiguous, other clauses of the contract should be looked at. His Lordship said that if he had not had any other assistance he would have been inclined to hold that the words concerned did not include holiday pay, but he had come to the view that there was at any rate a certain measure of ambiguity in the words. Therefore he was bound to look at the rest of the contract to see if assistance could be obtained from it as to what the words meant.

Referring to clause 59, the Judge said it had been submitted by Mr. Hoare for the council that the words 'rates of wages' in that clause appeared in substantially the same context as in clause 23(A). In clause 59, and there was really no dispute about it, the words clearly did not include payments for holiday wages, because if they did the contractor would be able to recover the holiday payments twice over. Mr. Hoare had submitted that if there was ambiguity in clause 23, the same meaning should be given to words in that clause as in clause 59, and his Lordship agreed with that view.

'If that is so it means that the contractor is not entitled to pass on to the building owner any increase in these holiday credits or payments over and above what was included in the tender when it was first made. That finding disposes of the case. I determine the case on that one point in favour of the council. Plaintiff's case must fail and their claim be dismissed with costs.'

Registered House-Builders

FEDERATION'S ANNUAL MEETING

SPEAKING at the annual general meeting of the Federation of Registered House-Builders, held in London on December 5, MR. C. R. SETTER, JP, of Bristol, the retiring president, commented upon problems facing private house-builders today.

'We are glad,' he said, 'that our industry has, for three years now, been free from physical controls. Nevertheless, it has to be recognised that our freedom is somewhat precarious.

'For reasons which economists can doubtless explain, our industry finds itself used as a chopping-block for the Government's financial moves. At the moment, their policy is to fight inflation. Shortly after the increase of the Bank Rate to 7 per cent., the Chancellor of the Exchequer spoke of a cut in housing of the general order of 20 per cent. More recently, in the Debate on the Address on November 11, the Minister of Housing and Local Government said he was taking as his aim that, in the financial year 1959-60, local authorities and new towns in England and Wales should complete 100,000 houses. This would mean rather more than a 20 per cent. cut in that sector.'

Referring to the remarks made by Mr. Brooke in the same debate, emphasising that the Government were not prepared to exempt house purchase from the credit squeeze, Mr. Setter continued: 'Ministers have made it clear that their policy is rather to limit the total expenditure on housing than to curtail the amount of building. Our problem, therefore, is to build as many, or more houses, without increasing the total expenditure.

'On the assumption that neither the present Government nor any Government

likely to succeed it will be in a position—or, alternatively, will wish—to give any special financial concessions to private house-builders, and, bearing in mind that, even if the present high bank rate is short-lived, interest rates are likely to remain high, it would seem that the cost of the building work itself will have to be reduced if we are to produce 100,000 private-enterprise houses in 1959-60. Many of our smaller members may feel disinclined to face up to these difficulties and even our larger firms may also feel disposed to reduce the scale of their future programmes.

'Such a trend will, no doubt, be not unacceptable to the Government in its present mood, but it is, I think, necessary for us to remember that the more successful we show ourselves to be in building houses economically and in large numbers, the less easy it will be for any future Government to justify using public funds for housing on a large scale by reintroducing the general subsidy.'

Officers for 1958

At the meeting, Mr. D. G. Howard, of Mitcham, was elected president of the Federation for 1958. Other officers elected were: Senior vice-president, Mr. Idris W. Owen (Stockport); junior vice-president, Mr. E. R. Bowyer, JP (Slough); immediate past-president, Mr. C. R. Setter, JP (Bristol).

THE BRISTOL BUILDING CENTRE

Official Opening

THE Bristol Building Centre was opened on December 6 by Mr. George Grosvenor, CBE, who succeeded Sir Howard Robertson as chairman of the Joint Consultative Committee of Architects, Builders and Surveyors and who is a past-president of the NFBTE.

In introducing Mr. Grosvenor, MR. E. F. TEW, FRIBA, the president of the Bristol and Somerset Society of Architects, who presided, said that this Centre was the result of local initiative and had no connection with the Building Centre in Store-street, London, although the new venture owed much to their guidance. In discussing the Centre's functions he made a strong plea that all manufacturers, particularly the 50 or so exhibiting in the Bristol Centre, should supply literature that was both standard in size and layout and technically informative.

MR. GROSVENOR, in declaring the Centre open, reminded his audience that some measure of the importance of the building industry was that, directly and indirectly, it employed 2m. people and spent £7m. every working day. It had always been a craft-based industry and must always be so. But new materials and new techniques and plant and the ever-increasing pressure of costs were constantly stimulating enlightened architects and enlightened builders to new and more efficient developments.

The Building Centre in London offered visual help to all who were anxious to take advantage of these new developments, and he hoped the Bristol Centre would do the same on a local scale. The building industry was one in which the importance of brain over brawn was becoming greater all the time. It must continue to grow if the industry was to remain efficient.

Efficiency also demanded a closer integration of the brain and activity of the architect, contractor, material manufacturer, and everyone else in the industry. The service which organisations such as Building Centres could give to the industry was underlined by the fact that the Duke of Edinburgh had recently consented to become a patron of the Building Centre in London.

Mr. Grosvenor ended by appealing to teachers in technical schools to send their students to the Centre and to come themselves. He also hoped that careers masters would bring their boys there so that they could learn a little of the great scope the building industry offered as a career.

MR. JOHN COLLINS, ARIBA, the chairman of the new Centre, proposed a vote of thanks to Mr. Grosvenor, and said that it would never have come into being but for the enthusiasm of Mr. Raymond Moxley, ARIBA.

The Bristol Building Centre occupies about 2,500 sq. ft. on the ground floor of Stonebridge House, a new block in the city centre, and it is hoped to double that area in the near future by taking in a further floor.

KINGSTON TECHNICAL COLLEGE

Road Construction Course

A POST-GRADUATE course of lectures on concrete and soil-cement road construction has been organised by Kingston Technical College in conjunction with the Cement and Concrete Association. The course will consist of nine weekly lectures followed by a full-scale demonstration of equipment in use at the Association's Research Station. The lectures will be given by members of the technical and research staff of the Association.

The course will be at post-graduate level and some knowledge of highway engineering will be required as a qualification for entry. Each session will be of about two hours' duration, the time being equally divided between lecture and discussion. Lectures will be on Friday afternoons at 2.45 p.m. starting on January 17, next.

Copies of the application form may be obtained from the Education Officer, Cement and Concrete Association, 52 Grosvenor-gardens, SW1, or direct from Kingston Technical College, Fassett-road, Kingston-upon-Thames, Surrey.

PERSONAL COLUMN

Bill Switchgear, Ltd., have appointed MESSRS. COOMBE & BICKNELL (PVT), LTD., P.O. Box 1782, Salisbury, Southern Rhodesia as agents for the Federation of Rhodesia and Nyasaland.

Renold Chains, Ltd., of Wythenshawe, Manchester, announce that MR. J. P. HALPIN has been appointed a director of the company.

COMPANY NEWS

Application has been made to the Council of The Stock Exchange, London, and to the Committee of the Leeds Stock Exchange for permission to deal in and for quotation for the 418,064 ordinary shares of £1 each of **Concrete Limited,** reinforced concrete engineers, manufacturing 'Bison' precast products, by means of an Introduction. Dealings were expected to begin on December 2. The company's preference shares are already quoted. Brokers are Cazenove & Co. in London, and Potter, Stephens & Co. in Leeds.

OUTDOOR ADVERTISEMENTS

T&CPA's Comments on Proposed Controls

IN response to the request of the Minister of Housing and Local Government, the Town and Country Planning Association has submitted observations on his draft regulations for the control of outdoor advertisements. Briefly summarised these are:

(1) The Association is keenly disappointed that the regulations have not been made simpler.

(2) When the new regulations are approved, the Minister should issue a circular stating their effect in the clearest possible terms.

(3) Through discussion with local authority and advertising interests, the Minister should seek the widest publicity and acceptance for the new regulations. Otherwise certain proposals may cause much resentment.

(4) When refusing permission for an advertisement (or attaching conditions in giving permission) on grounds of amenity or public safety, local authorities should state in writing the amenity or public safety considerations they have in mind.

(5) To reduce 'clutter,' advertisements on any face of a building anywhere should not exceed one-twelfth of the facial area.

Clarification of any of these points, or further information, will readily be given by the Association on request.

JOINER INJURED BY SHUTTER

£3,405 Damages Award

DAMAGES of £3,405, of which £1,155 had been agreed, were awarded at Nottingham Assizes on November 22 to Jan Wilhardt, a Polish joiner, of Newcastle-terrace, Nottingham, against his former employers, F.C. Construction Co., Ltd., Derby. The award was made in respect of injuries sustained in trying to prevent a 12-foot high wooden shutter, weighing over five cwt., from falling on his foreman. The company denied negligence. The £1,155 agreed damages were compensation for loss of earnings incurred by the plaintiff who was off work for two-and-a-half years.

MR. A. E. JAMES, for the plaintiff, said the firm was building a power house at the Stanton Ironworks at the time of the accident. Wilhardt and the foreman were moving a wooden shutter when another 12-foot shutter began to fall. Wilhardt told Mr. Justice Oliver: 'I tried to stop it, but it was too heavy.' He suffered a fractured thigh-bone. It was said he now had a permanently stiffened knee and a short left leg.

MR. THOMAS WOOLGAR, a site agent for F. C. Construction Co., said the shutter should have been lashed with ropes to the wall.

An Appointment

After nearly 17 years as Borough Engineer at Wolverhampton, Mr. W. Mervyn Law is leaving local government for industry—he has been appointed director of the Federation of Coated Macadam Industries, London, which comprises 167 firms throughout the country. He joins the Federation in March and takes over as Director in July.

THE NEW RENT ACT

Possible Effect of Mr. Gaitskell's Statement

SPEAKING at the Housing Centre, of which he is the honorary solicitor, on October 22, MR. AMBROSE APPELBE said one effect of the recent statement by Mr. Hugh Gaitskell that the Labour Party would repeal the Rent Act, 1957, when it came to power again, was that there had been a reprieve for many tenants on three-year tenancies. The landlords felt that the next Labour Government might resurrect the rent tribunals and therefore, instead of giving these tenants notice to quit, they were waiting and hoping that they would get vacant possession in October, 1958, in which case they would have no difficulty about getting a higher rent, as the premises would then be let on new tenancies.

The Gaitskell declaration had also caused an immediate cessation of landlords improving the worst type of property, because they were not going to pour money into a house if, in three years' time, the house would be nationalised, with only small compensation paid for taking it over.

The main purpose of the Act had been damaged greatly by fear of nationalisation. He did not think, however, that it was feasible to nationalise the whole of the house property of a rateable value of under £40 in London and £30 elsewhere. There were still some five million of these dwellings. If they were taken over by the local authorities all the opprobrium now levelled against the private landlord would be brought to bear on the local authorities and there would be bitter feeling against the government which had imposed such legislation.

There were some aspects of the Rent Act which could not be repealed, he went on. The Labour Party would find very great difficulty in dealing with rents of tenants who took over the tenancy of a house or flat after the old tenant had vacated the premises. If the rent tribunals were re-established he felt they would not be able to give much benefit to new tenants. They would fix rents much higher than those of today and would probably become encumbered with business, so that both tenants and landlords would tend to by-pass them in order to avoid having to wait a long time for a decision.

The Labour Party would probably have to nationalise the dwellings in the lowest strata, say those of not more than £25 rateable value. They would then find themselves cluttered up with some three million houses and he did not see how the local authorities would be able to deal with these. They were already getting rid of most of the houses they had requisitioned during the war. The result of such legislation would be to make the government that brought it in very unpopular and might cause it to lose the General Election after next.

Referring to the tenant's right to apply for a certificate of repair against the landlord, Mr. Appelbe said there were several matters which might be raised by a tenant in this connection and which would be very difficult for a county court judge to decide. They might require the setting up of another tribunal.

Plastics Trade Fair

'Plastics 1959,' the international trade fair of the industry, is to be held in Düsseldorf, Germany, from October 17-25, 1959. International participation will not this time be restricted to the machinery and accessories industries but will include the plastics producing and plastics processing industries. The technical organisation of the fair is in the hands of: Nordwestdeutsche Ausstellungs-Gesellschaft mbH. (NOWEA), Düsseldorf, Ehrenhof 4.

STREET LIGHTING COLUMNS

New CoID List of Approved Designs

THE Council of Industrial Design has now published a complete and up-to-date list of its approved street lighting column designs, which will be circulated to over 2,000 local authorities.

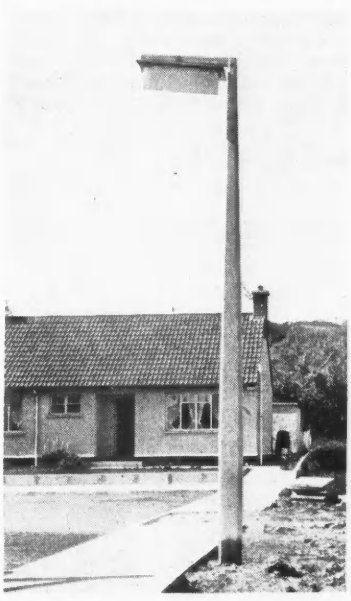
'Street Lighting Columns,' a second and revised edition of a list first published by the CoID in 1954, stresses in its introduction that approval of a design does not necessarily mean that it is suitable for all sites. A 25 ft. column on a Class A road may be vital for the diffusion of light while being out of scale with the buildings in its vicinity. On siting problems such bodies as the Royal Fine Art Commission, the Georgian Group and the Council for the Preservation of Rural England are willing to give advice.

The designs, which include models for both A and B Class roads, are listed under manufacturers' names, and all questions of availability, conditions of sale and delivery should be addressed to the manufacturers and not to the CoID.

At the request of the Ministry of Transport the CoID became responsible on January 1, 1952, for approving the designs of street lighting columns and brackets when grants were made from central funds for expenditure on trunk roads. Since then there has been a Street Furniture Committee at the CoID studying the problems involved in manufacturing mass-produced, well-designed lamp posts. In September, 1957, these responsibilities were extended to cover many other types of street furniture.

Copies of 'Street Lighting Columns' from the Council of Industrial Design, 28, Haymarket, SW1, price 2s. 6d. (post free 3s.).

'Highway X,' made by Concrete Utilities, Ltd. The lantern is 'Alpha One' 140W sodium type with metal bracket arm, by Atlas Lighting, Ltd.



A '90' column made by the Stanton Ironworks Co., Ltd. The lantern is a 'Beta Two' 2 x 2' 40W fluorescent lantern, made by Atlas Lighting, Ltd.

A Type 8 column made by the Stanton Ironworks Co., Ltd. The lantern is a 'Gamma One' 4 x 5' 80W vertical type, made by Atlas Lighting, Ltd.

The Practical Selection of Modular Sizes for Components

A PAPER TO THE MODULAR SOCIETY

A PAPER on 'The Practical Selection of Modular Sizes and Components' was given by MR ANTHONY WILLIAMS, AADipl, ARIBA (Modular Co-ordination Studies, British Standards Institution), at a meeting of the Modular Society held in London on October 28, from which we take the following extracts. Mr. Williams said:

Though the term 'component' has long been part of our normal building terminology, the nature of a component was first really clearly defined by Mr. Bruce Martin in 1955, when he gave a paper to this Society on the classification of building material. In it he suggested that all material used in building could be usefully and exhaustively divided into three groups: raw or processed *Materials* which are used in their primary form either in the making of industrial products or else directly on the site; the various types of industrial products that are made in the factories and transported to the site as finished building parts, to which he gave the collective name of *Components;* and the *Functional Elements* of a building, or those parts that are constructed on the actual site from an assembly of different products and materials.

These divisions represent not only the fundamental morphological distinctions between the different types of building parts, but also the essential differences in their dimensional characteristics and significance. Futhermore, it was conclusively demonstrated that for the purpose of standardisation a modular system could only be applied to those parts coming within the category of components, since it is only these parts which are made as industrial products and possess constant or significant dimensions to which all the other building dimensions are directly related.

In 1954 the Modular Society itself proposed that trials should be made on the already widely considered 4 in. dimension, or as Mark Hartland Thomas calls it, the 'international module.' All our work at the BSI has corroborated the Modular Society's choice of 4 in. as the basis for future building standards.

Coming to the 'official' subject of his talk, the range of modular sizes, Mr. Williams continued: The purpose of the modular system is successfully to combine the individual simplification of the present sizes for each component with the introduction of a universal dimensional inter-relationship throughout the entire component range. As the vast majority of present component sizes fall between 0-120 in., the basic range of modular sizes comprises the size of the module, 4 in., and all the multiples occurring within these limits—30 sizes in all.

A Basic Range

As I see it, the procedure should be in the first place to standardise all 30 modular sizes as the basic range of available standard dimensions. Following this, the selection of the appropriate modular sizes for each component should then be made on empirical grounds; that is, after due consideration of the individual nature of each product, its functional requirements in manufacture and the part it plays in building design. It is this second method of selection that I have called in my title the 'practical selection' of modular sizes.

The practical selection of particular modular sizes will have to be made by those of you who will be concerned with determining the future standards for individual modular components. On the problem of choosing the right modular sizes to which each component is to be designed and manufactured, it must be said at once that there is still much work to be done. But by 'work' I do not, however, merely mean further theoretical study. Precisely because the selection of individual sizes is of necessity an empirical rather than a theoretical selection, sufficient information on all the different factors governing their correct allotment can only be gathered as a result of full-scale practice by industry.

As there are only 30 absolute or rounded modular sizes on the component range between 0-120 in., the problem of individual selection is not, at the outset, so formidable as might at first be supposed, once we take into consideration the fact that the materials, form and function of each component will themselves automatically restrict the possible number of sizes that can be chosen for that product. For instance, normal single door leaves for housing, excluding those for cupboards, can by their nature only have widths which are between 24 and 36 in., so that on functional grounds alone the choice of modular sizes for this component is immediately restricted to 24, 28, 32 and 36 in.

In the same way, the limits to the existing range of sizes for all other components on the present industrial range will automatically determine the limits for the ranges of possible modular sizes, immediately restricting their number to what may be called their 'functional sizes.'

The application of functional limits is thus the first and obvious principle or guide to the selection of the appropriate sizes for individual components from the general modular range; since in each and every case it at once eliminates all inapplicable sizes.

An Open Question

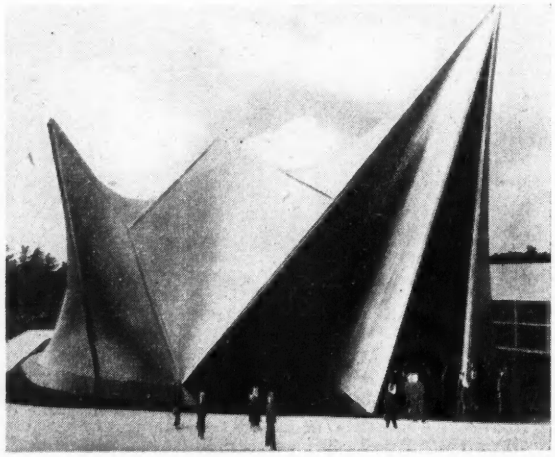
The question of whether from these particular functional ranges a still further selection is to be made or whether all sizes are to be produced as standards is at the moment an open one. However, it is safe to say that either in the interests of further size simplification or in the course of normal design choice some elimination of the functional sizes will undoubtedly be required.

Since the planning of modular buildings and the sizing of modular components will both be on the same dimensional basis, the 4-in. module, the proof of good component sizing as regards design requirements will be in the number of different modular spaces in the design that can be filled by the particular component sizes chosen. Now, according to the definition of a modular size, each component will occupy its own modular space in assembly. But equally they may be regarded in combination with each other as filling many possible modular spaces, that is any of those spaces which are the result of the planning sizes chosen by the designer.

In this respect components may be usefully regarded as falling into two classes. First there are the parts, like doors, gas cookers, baths, and so on, which because they are usually employed singly can be considered as only filling

Philips Pavilion, Brussels Exhibition, 1958

The pavilion, designed by Le Corbusier, to be built for N. V. Philips Gloeilampenfabrieken, of Eindhoven, Holland, on the site of the 1958 *World Exhibition at Brussels. The architect has entirely broken with tradition in his design; essentially, it is a system of saddleplanes with three merging slopes, the highest of which rises* 70 *ft. above floor level. This, to be carried out in prestressed concrete, permits of a free span. The floor covers about* 5,400 *sq. ft. The whole structure will be given a* 2 *in. thick concrete skin*



their own modular spaces. In these cases a selection of any of the functional sizes can simply be made according to whatever particular considerations might be relevant to the individual designer or manufacturer.

The other class of components are those parts, like kitchen cabinets, blocks, window panels, ceiling panels, roof panels, etc., which are always used in combination with themselves and frequently in runs. With these products the problem of correlating their sizes to fill a number of chosen modular spaces takes a more specific form and has to be given close attention when making a selection of functional sizes.

Components of this class may be combined in runs in two ways, when they are all of the same size or when the sizes may vary. As far as ordering, stocking and production it would obviously be far simpler if each component was only made to one size; but if that were the case then the different modular spaces that could be filled on the run would automatically be restricted to the multiples of this one available size.

If, however, two sizes are chosen, the number of possible spaces filled at once appreciably increases. To illustrate this point I will take an actual example in the widths of kitchen cabinets. If a kitchen cabinet is 24 in. wide, then in a design dimension of 0-120 in. it will only be possible to fill five spaces; if the cabinet is 20 in. wide it will fill six spaces; and if it is 16 in. seven spaces can be filled. If we use two sizes the position immediately improves: with cabinets having widths of 16 in. and 24 in. fourteen spaces are filled; with widths of 20 in. and 24 in. twenty spaces are filled; and with 16 in. and 20 in. the number of spaces filled is 24, compared with only six spaces when using the one width of 20 in. There is not much to be gained, however, by adding a third size; for, if all three widths, 16 in., 20 in. and 24 in. are used, the increase in the number of spaces filled is only from 24 to 26.

Two Sizes Advantageous

Thus in modular design it will be of great advantage with products of this class to have two sizes to each component, but these sizes must be carefully selected, since, as we have seen, they do not all give the same result as far as size correlation is concerned. My conclusions on our work to date are that the two sizes will frequently require to be at an interval of 4 in. apart; but that in any case they should, if possible, be chosen so that they do not have a highest common factor of more than 4in.

Unfortunately, the use of this general method for achieving size correlation as a guide to the selection of individual sizes is limited to the smaller components. Since immediately the sizes of components become greater than about, say, 32 in., the number of spaces left unfilled gets out of all proportion. For example, if concrete panels of 60 in. and 64 in. are used, the number of modular spaces that can be filled up to a dimension of 120 in. is only three, and it is of little value to know that over, say 20 ft. they would in fact fill all the possible spaces.

In order to achieve the maximum degree of correlation for these large components, it is advisable to limit the number of modular spaces, which, in turn, will necessitate the use of a design tool. This design tool is, I suggest, the planning grid.

The most suitable grid sizes will probably be the multiples of the primary numbers 2, 3 and 5, which give sizes like 32 in., 40 in. and 48 in., and 64 in., 80 in. and 96 in., that have the maximum number of factors divisible by 4 in.

To sum up the modular method for standardisation that I have outlined, we can say that it is a system comprising five essential features: the concept of components, the module of 4 in., the concept of a modular component having a modular and an actual size as defined by the overall system of tolerances, the modular reference system in the form of the module grid, and the basic range of modular sizes to be standardised as the range of available dimensions.

Functional Limits

From this range the standard ranges of sizes for each individual component can be automatically determined by the appropriate functional limits. But for the standardisation of reduced functional ranges, which may be desirable in the case of many components, there can be no easy or uniform method of making the elimination. As I have tried to show, the conditions governing the correct choice of functional sizes are highly variable, so that each component will have to be considered separately on its own merits by those concerned with standardisation.

The modular system thus embodies two fundamental methods of size selection, a theoretical and a practical method, which together represent three successive stages of selection from the original range of existing component sizes. The first is a universal selection by the theoretic means of applying a module as a dimensional coefficient to the sequence of natural numbers to give a basic range of 30 modular sizes. The second is the particular selection from this modular range or the ranges of appropriate sizes to each component by the general though empirical method of applying functional limits. The third selection, also made on empirical grounds, is the necessary individual choice from these functional sizes which is made by the various manufacturers and designers to meet their particular requirements.

In making this choice it has above all to be borne in mind that with all components, except those that are used singly, their sizes have to be chosen specifically to accord with the principle of size correlation which may then be used as a general guide to such individual selection. The measure of size correlation required may be assessed with the smaller components by the general method I described, while for larger components the choice has to be made, initially at any rate, on an individual basis by means of a planning grid.

Conclusion

Can modular co-ordination interpreted in this system be successful as a means of relating economic production with good design? So far as the purely technical solutions are concerned there seems every reason why it should. On paper it would appear to have all the marks of a valuable practical system; on the theoretical side its principles when taken together can be seen to form an integrated, self-consistent whole; while on the practical side every attempt has been made to relate it, so far as is possible, to the various requirements entailed in both the manufacture of and design with modular components. But it should be remembered that because modular co-ordination is a practical concept its justification is the usefulness of the modular system in practice.

Industry needs a system of modular co-ordination as soon as possible; so much is universally admitted. It must therefore be prepared to take a working hypothesis, which has been proved so far as it can be in theory, and co-operate in making this hypothesis a fact by filling in the missing details that theoretical work alone cannot supply.

The modular system, in other words, has to be perfected in practice. More than sufficient information is now available on all the basic principles, the theory is advanced enough to warrant full-scale application. Above all else, the success of modular co-ordination at this stage requires the will to make it succeed.

If proof of the system's validity is wanted, then it is up to us all, manufacturers and designers alike, and especially to members of this Society, to make a beginning by leading a demand for its full-scale application.

STUDENTS' FLATLETS PLAN

Objections by Holborn MBC

THE Housing and Planning Committee of the Holborn MBC has expressed strong objection to a proposal to redevelop a site bounded by Bernard-street, Kenton-street, Coram-street, and Marchmont-street, by a block of eight-storey buildings running north and south for the whole length of the site, with single-storey shops with basements fronting Marchmont-street.

It is understood that the scheme would provide flatlets for students, but the committee considers it desirable to endeavour to retain dwellings for families. Some 245 persons, including the inhabitants of five boarding houses and 164 families, would be displaced by the scheme and, in view of the present extreme shortage of housing accommodation, there would be little hope of their being rehoused within the Borough.

The committee also points out that in considering applications for adjoining vacant sites, including the MBC's own flats, the LCC has hitherto stipulated that the scale and character of the new development should strictly conform with that of the adjoining Georgian property, and the committee, while having no objection to the proposed design in itself, considers that it would alter the scale and character of this part of Bloomsbury without providing accommodation for a greater number of persons.

Gas Appliances in Tall Buildings

THE 'SE-DUCT' SYSTEM

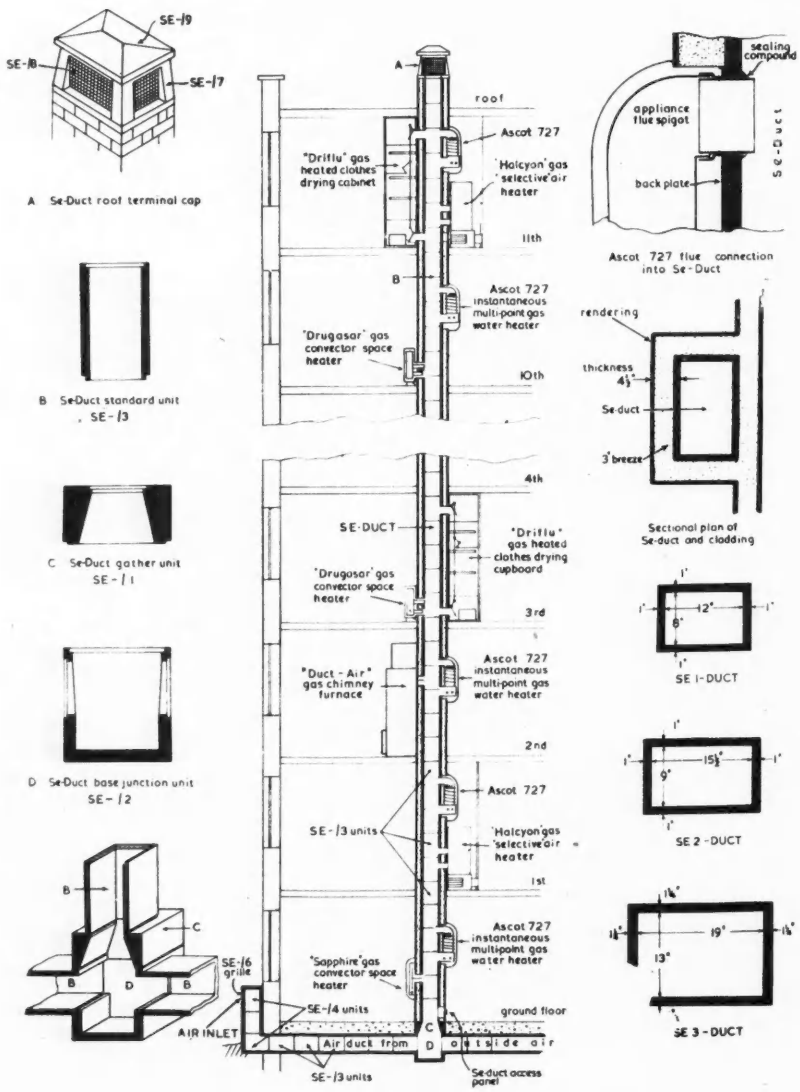
AS a part of the Gas Industry's programme of research to simplify the problems of flueing gas appliances in tall buildings, the idea was developed in 1955 of attaching 'balanced flue' space heating, water heating and other appliances, to a common duct and making the whole system, appliances and duct, a self-contained unit instead of a multiplicity of individually flued appliances.

A simple vertical duct (open top and bottom) through a building would clearly be the cheapest and simplest method of achieving the required objective. Provided the proportions of the duct are correct for its height and for the amount of gas to be burnt in it, no difficulties need be experienced regarding the combustion of 'room sealed' gas appliances fitted in upper floors of high buildings when connected to a common duct.

The Se-Duct was developed by the South Eastern Gas Board and has been thoroughly tested in two 60-ft. installations, and experiments carried out under all weather conditions have confirmed the mathematical calculations so closely that it is now possible with reasonable certainty to prepare designs for any application even in buildings of up to 20 storeys.

The diagram shows how the Se-Duct is planned into a multi-storey building and also details of the various units. An installation shows, it is claimed, substantial savings in multi-storey buildings over conventional flue installations.

The system was shown at the Building Exhibition by Ascot Gas Water Heaters, Ltd., 255, North Circular-road, NW10, who will on request supply further details.



TOWN PLANNING DECISIONS

Minister's Views on a 'Lopsided' Bungalow

AFTER submitting its design to a panel of architects, the East Suffolk County Council vetoed the erection of a bungalow at the junction of Woodhouse-lane, Purdis Farm, for which permission had been sought by Mr. W. Eastwood.

Mr. Eastwood appealed, and at a public inquiry an architect called by the County Council said of the proposed bungalow: 'It has a lopsided elevation, an untidy silhouette, and its roof is too high.' The panel of architects rejected it to prevent the spread of "subtopia" to rural areas.' Mr. T. B. Oxenbury, County Planning Officer, said that the architects' panel preferred bungalows to be 'long, low buildings with horizontal lines.'

In communicating his decision on the appeal, the Minister of Housing and Local Government states that in his opinion the refusal of planning permission for the erection of a building on grounds of design alone is not justified unless it could be claimed that the building would have a seriously detrimental effect upon the visual amenities of the neighbourhood. He agrees with the County Council and the panel of architects that the design of the appellant's proposed bungalow possesses many unsatisfactory features and could be improved, but he notes that development in the neighbourhood of the appeal site is varied in character and of no particular architectural distinction.

In these circumstances he has come to the conclusion that he would not be justified in withholding consent and he accordingly allows the appeal and grants permission for the construction of a bungalow and garage on the appeal site in accordance with the submitted plans.

Amlwch Builder's Scheme of Residential Development Dismissed on Appeal

MR. IVOR HUGHES, an Amlwch builder and contractor, has had his appeal against the refusal of Anglesey CC to grant planning permission for the residential development of land opposite Cae Bach, Bull Bay-road, Amlwch, dismissed by the Minister of Housing and Local Government.

The Minister, in the course of his decision, said he considered that this attractive landscape ought not to be broken into unnecessarily, and he saw no reason to dissent in general from the view expressed by the Council that it would not be in the interests of amenity or of the proper planning of the area if Amlwch and Bull Bay were allowed to be linked by a ribbon of development along Class I road A.5025.

He realised that for the Council to have allowed the nearby house, Garreg Fawr, to be erected was to some extent an action which was out of accord with this general principle, and he had also borne in mind that development of the appeal site might make fuller use of public services already provided, and at the same time make Garreg Fawr less obtrusive. He did not, however, regard these considerations as out

weighing the foundamental objection which he saw to the proposal, especially in the light of evidence given at the inquiry that there was land more closely within Amlwch which could provide a substantial number of house-plots. In his opinion the proposal would result in an extension of development which, having regard to all the circumstances, ought not to be allowed.

Kingston-on-Thames Factory Proposal Partially Allowed

THE Minister of Housing and Local Government has partially allowed an appeal by Messrs. Blewis & Shaw against the refusal of the local planning authority to allow the erection of a plastics moulding factory on land next to the railway in Lower Ham-road, Kingston-on-Thames.

He is of the opinion that whilst too large a building would cut across the industrial policy for the area, the use of part of the land in question could be permitted. He points out that all the firm's important customers are situated in the London area and that it depends on key workers living in the Kingston district.

The Minister has dismissed a similar appeal by C. F. Ide Engineering, Ltd., on the grounds that the Lower Ham site in question would not be suitable for the firm's heavy engineering industry.

Minister Allows Construction of Bay Window and Porch

AN appeal against the refusal of the local planning authority to permit the construction of a bay window and porch to a house in Park-road, Kingston-on-Thames, and against the condition imposed by the Council in granting permission for the construction of a concrete wall, extending along the side boundary of the same property, that the concrete should be sepia tinted, has been allowed by the Minister of Housing and Local Government.

The Council stated that the proposed bay window and porch would project more than 4 ft. in front of the house, which is one of a semi-detached pair, and would be within 5 ft. of the window of the other house. They considered that the appearance would be unbalanced and that the projection would, moreover, detroy the planned symmetry of the siting. The two pairs of houses on either side of the junction with Parkfields-road had been deliberately set back further from the highway than the rest of the houses in the road; this symmetry had value and should not be broken. As regards the concrete wall, the Council considered that the amenity of the neighbourhood would suffer if this long and rather high wall were permitted in natural uncoloured concrete.

The Minister, in the course of his decision, notes that the proposed bay window is designed to enlarge the very small living-room, and, together with the porch, will not project in front of the main building line in Park-road. He does not consider that he would be justified in refusing permission for this small improvement, particularly as the adjoining house is to the south of the appellant's and its window will not be overshadowed. Nor does he consider it necessary that the side wall should be coloured sepia when, in fact, the neighbouring houses are externally finished in grey-coloured rough-cast and the colour of the prefabricated bungalows in Parkfields-road is similar. He has decided, therefore, to permit the erection of the bay window and entrance porch in accordance with the submitted plans and to discharge the condition relating to the colouring of the boundary wall.

Stipulation Imposed in Allowing Change of User

AN appeal by Mr. R. N. W. Adkins against the refusal of Hemel Hempstead RDC to permit him to use land and buildings at Bovingdon (Herts) as a car-breaking yard has been allowed by the Minister of Housing and Local Government, subject to the stipulation that this use shall be for the benefit of Mr. Adkins only. Upon Mr. Adkins discontinuing this business the Minister has ruled that the premises shall revert to residential purposes.

Permission Given for Light Industrial Buildings at Former Coal Yard

THE Minister of Housing and Local Government has given permission for two light industrial buildings to be built on the site of a former coal yard at Canterbury-road, Croydon, following an appeal against Croydon Council's refusal to allow the development by Mr. F. T. Edwards.

Announcing his decision by letter the Minister says that while he fully supports the council's policy of reducing industry in Croydon, he feels that an exception must be made in this case.

The council had put forward the view that the site should be used for housing. They said that industrial building on the land would injure the amenities of five houses adjacent.

LCC's Refusal to Allow Industrial Building in Residential Area Upheld

AN appeal by Tunbridge Manufacturing and Supply Co., paints and plastics makers, for permission to erect a building at the rear of 50, Longley-road, Tooting, to be used for filling paint tins, bottles, etc., has been dismissed. The firm had earlier sought permission from the London County Council, and the appeal to the Ministry of Housing was heard last month.

In their letter to the firm's solicitors the Ministry say: 'It is clear that your client's existing factory is wrongly sited on this backland between the houses in Longley-road and the River Graveney, in an area which is now predominantly residential and which is intended to be used wholly for that purpose.

'It would be incompatible with the provisions of the Development Plan, in relation to the decentralisation of industry and to the segregation of industry from residential areas to allow any expansion of this special industry in the area. Accordingly the Minister has decided to dismiss your client's appeal.'

In-filling Development Allowed on Appeal

BECAUSE it feels that the proposal constitutes 'reasonable in-filling without serious detriment to the green belt,' the Ministry of Housing has allowed an appeal by Newborough Estates, Ltd., Solihull, against the council's refusal to permit the building of houses on six acres of land at Knowle.

The council objected on the grounds that sufficient land had been zoned in the borough for houses, and that problems raised by the provision of roads and services for the areas already approved should not be increased by permitting development of areas not zoned for houses.

Guildford RDC's Refusal to Allow Development Upheld by Minister

THE Minister of Housing and Local Government has dismissed the appeal by Mrs. Barnes-Brand against the refusal of the Guildford Rural District Council, acting on behalf of Surrey County Council, to grant planning permission for the erection of eight cottages on land at Sutton Abinger. An inquiry was held on July 30.

In a letter giving his decision, the Minister says that although some scattered development has taken place in this area in the past, it remains essentially rural, and he entirely agrees with the Council that further building, except for strictly local needs, should not be permitted.

The appeal site is a very attractive and still largely unspoilt countryside, well away from the nearest village; it is quite the wrong place for houses, especially on rising ground in a prominent position. He agrees with the Council also that the proposals for obtaining access to the road would not be satisfactory and could not be made so without destruction of hedges and trees and an undesirable opening up of the whole frontage.

Chalet-Bungalows : Question of Design and Appearance

ON the ground that the development was unsuitable and out of keeping with neighbouring properties, Coulsdon and Purley UDC refused to permit the erection of two chalet-bungalows on land at Wisborough-road, Sanderstead.

In giving his decision on an appeal against this refusal, the Minister of Housing and Local Government says he notes that permission has already been given for houses to be built on this land, but no detailed plans have been submitted, and the issue on this appeal is whether chalet-bungalows would be so unsuitable a type of building for this site that they should be ruled out.

The Minister is not convinced that they should. He notes that the other houses in this street vary considerably in appearance and he would not say that their common feature of being designed in two storeys was enough, of itself, to establish an architectural pattern which it is important to maintain. He does not think that the objection that chalet-bungalows would be lower in height or less compact has enough weight to justify restriction of the appellant's choice in these particulars and, in the possibly more important matters of quality of design and materials, he does not think this type of building unacceptable in these surroundings. He has accordingly decided to allow the appeal and permit the erection of two chalet-bungalows on the land, subject to the condition that the siting and elevations of the proposed buildings shall be as may be agreed with the local planning authority.

Institute of Building Estimators

'WHY PRICE IT?'

A MEETING of the London branch of the Institute of Building Estimators held recently at the Bedford Corner Hotel, 11, Bayley-street, WC1, was addressed by MR. A. T. BRETT-JONES, ARICS. Mr. D. Mudd was in the chair.

Mr. Brett-Jones said he had entitled his address 'Why Price It?' because he considered the reasons for pricing a bill of quantities were more than just for tendering purposes only. Building owners nowadays were often public or semi-public bodies or big industrial concerns who could be classed as multi-clients, i.e., clients who would erect a large number of similar buildings, not necessarily at the same place.

These clients wanted to know not only how much an individual building would cost but how much each part would cost. Further, they required information on the probable cost of similar buildings and parts of buildings in the future. As a result of this quantity surveyors were tending to analyse priced bills more and use the information obtained for future planning.

Little Regard for Cost

'It must be remembered that at present, due to inflation and scarcity, many buildings are being built without too much regard for cost, but when saturation point had been reached the building owner will have to build, say, an office block more economically in order to show a reasonable profit. Stability, and an adequate supply of buildings to meet demand, should make building owners more cost-conscious,' he said.

'This consciousness will have its effect on both quantity surveyors and building estimators, both in the way work is measured and presented and the way in which it is priced. Before speaking of these effects, however, let me say a word about research. Cost research is now being carried out by many groups, some of which are: RICS Cost Research Panel, Wilderness Study Group, RIBA Research Committee, Building Research Station, Ministry of Education, Ministry of Works, LCC. The Cost Research Panel of the RICS have already made several hundred thousand calculations in analysing the actual price of many blocks of flats and housing schemes. Their first report will be published soon. The Wilderness Study Group are calculating the theoretical cost of many hundreds of buildings in order to find out the effect on cost of shape, height, different numbers of storeys and different floor loads.

Mr. Brett-Jones went on to consider how quantity surveyors might go about their task. He thought that elemental bills would not help them in connection with price analysis, which was a more correct term than cost analysis First, putting the analysis into a formal document such as a bill made it rigid instead of flexible; secondly, the proper way to look at a building was from several points of view, as all its elements were integrated, and not merely from one point of view which was all that was obtained in an elemental bill. Thirdly, elements, as they had been outlined generally, seemed to cut across what the client wanted to know. This was illustrated by the Ministry of Education Bulletin No. 4 list of elements which showed work below ground-floor level as:—All excavation, concrete foundations, filling under floors, brickwork, service ducts and duct covers.

Continuing, he said the reaction to these is:—Trench excavation will vary according to the shape of the building; excavation to reduce levels and filling under floors vary according to the site; brickwork varies partly according to the shape of the building and partly according to the site; service ducts and duct covers vary partly according to the foundations, but chiefly according to the requirements of the heating and hot water installation;

'What one wants to know for cost planning future work is an analysis such as this:—Foundations as on a flat normal site; extra foundations due to site varying from a flat and normal site; extra price of service ducts below ground which will be added to the price for heating installation.

'Again, the Ministry definition of window elements excludes glass. It would seem that a more logical approach would be: Provision for natural lighting—taken as an extra over walling; provision for ventilation, i.e., extra price of opening lights; mechanical ventilation and air bricks would be added to the latter item whilst roof lights would be divided between the two as relevant.'

The speaker went on to emphasise that it was not merely a matter of defining the elements differently from the Ministry of Education. The approach to the elemental bill was fundamentally unsound. The approach to analysis which had been outlined was the functional approach. The functional analysis by its very nature could not be presented in the form of a bill, as it would be far too complicated and would, for instance, include deductions.

The Functional Approach

It was, however, illuminating to compare the functional and elemental approaches to a recently constructed building. The functional analysis was based on the PC for pipes and boilers, the boiler-house complete, extra price of service ducts, boiler stack, fuel compound and remaining builder's work in connection with these items. The elemental analysis gave only the price of the engineering services—a figure of £11,500 and the functional analysis between £17,000 and £18,000. This was a big difference and the client could not plan which heating system was most economical when he was told a figure for the cost of one particular heating system which was 60 per cent. out.

'The elemental analysis for this job,' he said, 'showed a cost of £7,195 for the windows, but that did not include the glass and paint and took no account of the fact that if the window was not there a wall would be. A functional analysis alone will show which parts of a building are really doing their job and which are there for some less supportable reason. It must be done more than once because parts of it overlap. Thus, windows may be put as provision for lighting, etc., but the boiler-house, which is part of the price of heating, may include windows. For this reason and because of its complexity it must be done on approximate lines which, indeed, is all that is necessary for the purpose required.

The Estimator's Task

Turning to the building estimators' task, Mr. Brett-Jones said that in the past estimator's tender and prices had been regarded as highly confidential. He hoped that this attitude would now be regarded as out of date. Already prices were being used in surveyors' offices for approximate estimating and the like, but the question was: were those prices right? 'Some estimators price preliminaries; others do not. Some add a percentage to PC items; others do not. Some price everything and then knock off £X000 between total of summary and tender figure. Some price early trades high and later trades low. Some just price the whole job high—and still get the job. Yet others price it much too low and also get it. These last are usually much more trouble than the others,' he stated.

There were countless variations and they were not small. He went on to quote one job he knew of where the total amount of the priced bill, without preliminaries, was £300,000. The preliminaries were not really priced, but £50,000 was added in at the end of the collection. On another job there was a deduction between the total of summary and tender of over 10 per cent. on the rates of all builders' work. It was these variations which upset the quantity surveyor when he was trying to use the estimator's priced bills for analysis and future cost planning.

Quantity surveyors would like to see a standard method of pricing, he said amidst laughter, and a method which would separate the variables:—

1. Differences due to the site.

2. Inflationary costs due to too much work.

3. Deflationary costs due to too little work. This might be achieved by:—

(a) Pricing all items at cost and then adding profit and overheads separately;

(b) Including insurance in general labour rates and therefore in individual price rates;

(c) Pricing preliminaries separately;

(d) Adding the inflationary or deflationary costs on separately.

Assuming all the above, the quantity surveyor could then tell his client that whereas on this side and at this time the job would cost him £X, he could expect to get it for £X+Y or £X−Y in 'neutral' conditions. However they went about it, cost planning was here to stay and the quantity surveyor and building estimator between them were the only two who really had the vital data for the subject.

Questions answered by Mr. Brett-Jones were as follows:—

Q: What are your ideas on the item in quantities which appear to cover all the things that have happened in the past, e.g., 'Include for everything whether specifically included or not.'?—*A:* I think that horrible item should never be in a bill. I recall a job where an engineer who would do the quantities for engineering work put in that item. When his bill arrived, which was one of a group of bills, we would not add our name to it for this reason. In this case the contractor priced the item at £550. When I asked how he arrived at the price I was told he had noticed the coffer dam had been missed. This was worth £500 and £50 was for 'miscellaneous' items.

Q: Do I understand that you propose to take only the lowest tender or do you intend that all the tenders for one job shall be subject to analysis?—*A:* No. Price analysis does not affect the job that is being analysed, but future jobs. If there is a large programme of schools, then the tender for one is used as data in planning others.

Q: I cannot see how information is of use unless it is at a foot super rate as, bills are priced on different bases and a standard method of pricing is useless.—*A:* You have to make allowances and adjust and break down prices by guesswork.

Comment from floor.—We have had experience in producing lists of basic prices, particularly for flats. Whenever I have produced a civil engineering price for flats I have had to produce a price for work above top surface of ground-floor slab and do this per foot super. This is the only way I can check my prices.

Cost Analysis

Q: On the question of cost analysis there are two important items which affect the cost of the job. There is the time factor—the time of the year the job is to start and also the length of time to be taken for the job. The actual position of the contract is important, particularly when in an area where many contractors are competing against each other for labour. This affects the value of the contract and I fail to see how this can be avoided. If a recession takes place, what happens to the collection of present information? Again, if any materials are in short supply, it affects the cost of job considerably.—*A:* Time is a difficulty because we may send out bills in April for pricing in May, hoping to start in June and build during the summer. A private client may well be prepared to agree—or otherwise—within a week, but a public client may have to ask permission from a higher authority and the job may not start until November or December. As far as position goes, New Towns are a classic example. We have an item in the preliminaries for importing labour and if the item is properly priced one can get some idea of the cost involved.

Comment from floor.—I think there is too much danger of theory overriding practical knowledge.

Q: On one particular job we designed the work and produced our own bills of quantities. How sacred is our bill if the owner offered the job to somebody else?—*A:* To use your bills would be most unethical.

Q: Builders' bills are usually used to train estimators, but there are different schools of thought as to the way that bills should be priced, whereas a surveyor usually only learns theory.—*A:* I believe surveyors should serve a term in a contractor's office to learn something of this side of it. The ideal would be to spend a period pricing bills himself.

Q: Why is it that surveyors consider that when there is a variation showing a saving in work, there should be a proportional saving in preliminaries?—*A:* A surveyor would be very naive to expect preliminaries to drop merely by putting in cheaper finishings. There is probably little saving in preliminaries in most variations, but if you reduce the size of the building, then there should be a reduction in these.

Comment from floor.—Quantity surveyors tend to pad a bill out so that they can later reduce it and also expect to reduce the preliminaries.—*A:* It is not right. Bills of quantities should represent the job as it will be. Whilst the client is usually pleased when the job comes out at less than the original price, I would like to see the 'padding' in the form of provisional sums so that it is quite obvious that they are contingencies.

NEW BRS BALL-VALVE

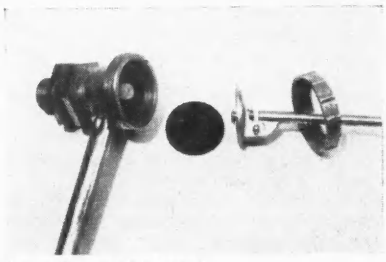
Advantages Over Older Types

AN entirely new ball-valve intended for use in domestic water storage and flushing cisterns, promising longer life, greater hydraulic efficiency and quieter operation than the present 'Portsmouth,' 'Croydon,' and BS1212 types has recently been made available to the public after three years' experimental work carried out at the Building Research Station.

The new valve, which is known as the 'BRS' pattern, has been designed by Mr. A. Sobolev, BSc (Eng), who began work on the project early in 1954 as the result of many complaints of ball-valve failure.

A large number of ball-valve failures were examined, and experiments were begun to try to discover the real cause of the erosion to which most valve seatings seemed particularly prone, and which appeared to be the most common source of leakage.

When completed, the experiments proved conclusively that the damage to ball-valve seatings is caused mainly by 'cavitation,' a phenomenon brought about in certain conditions of water turbulence by the collapse of minute bubbles—or cavities—of water vapour. The theory is that water rushing in to fill these tiny cavities strikes the surface of the valve seating with very great force, sufficient, eventually, to cause chipping and grooving of the metal.



Crown Copyright Photograph

The new BRS valve. Visible inside the body is the specially shaped jet, designed to reduce cavitation. Also shown is the rubber disc or 'washer', and the plunger which controls its very small movement. The float (not visible) is locked with a thumb-screw making it readily adjustable to maintain the exact level of water required. After a number of experiments with different materials, nylon has been found most satisfactory for the jet, which is screwed into the body of the valve. Different sizes will be made available to cope with both high- and low-pressure supply

It was found that the purely chemical action or corrosion, brought about by chlorination, hardness, and impurities in different types of water, had a more limited effect than had previously been supposed. On the other hand, higher mains pressures now generally used were found to contribute directly to the increase of cavitation.

A new valve has been designed, in the light of these experiments, to reduce the intensity of cavitation to a minimum while maintaining a satisfactory rate of discharge. This is the basis of the new BRS valve. There is no sliding piston to 'stick' as in previous models; instead, a flexible rubber disc is used with a very small opening movement operated by a plunger which is kept dry and therefore free from the effects of lime deposit and corrosion.

It is interesting to note that this particular device survived a special test of 1¼ in. cycles, opening and closing at the rate of one cycle per second, without sign of failure. Before the finished product was considered worthy of recommendation, complete performance trials on 500 valves were undertaken in various parts of the country over a period of 12 months.

The valve is now in limited production and is available to local authorities and water undertakings. It is cheaper and simpler than any of the present patterns and has a much longer expectation of trouble-free life before the need may arise even to change a washer.

One advantage for which many householders will be grateful is the greater silence of operation of the new BRS valve. The loud 'sizzling' noise emitted by many ball-valves is not only a source of embarrassment, but also some measure of their inefficiency. It is the audible evidence of cavitation.

BOOKS RECEIVED

FIRE PROTECTION YEAR BOOK, 1958. Edited by J. L. Eades. (London: Benn Bros., Ltd.) Price 20s.

THE DESIGN OF STRUCTURAL MEMBERS, Part I. By H. T. Jackson. (London: Architectural Press.) Price 25s.

SPON'S ARCHITECTS' AND BUILDERS' PRICE BOOK. 83rd Ed. (London: E. and F. N. Spon, Ltd.) Price 30s.

THE ART OF MAKING MOSAICS. By Louisa Jenkins and Barbara Mills. (London: D. Van Nostrand Co., Ltd.) Price 45s.

YEAR BOOK OF THE HEATING AND VENTILATING INDUSTRY. (London: Technitrade Journals, Ltd.). Price 12s. post free.

YEAR BOOK OF THE INSTITUTE OF CLERKS OF WORKS OF GREAT BRITAIN INC. (London: G. W. Harris, 43, Leopold-road, NW10).

∴ *Books reviewed in these columns may be obtained on application to the Book Dept., 'The Builder,' 4, Catherine-street, Aldwych, WC2. Cash (which should include 1s. to cover postage and packing) should accompany the order.*

ENFORCEMENT NOTICES UNDER PLANNING

Altered Use of Land

From a Legal Correspondent

TWO interesting legal cases have recently been decided in relation to enforcement notices served under the Town and Country Planning Act, 1947. The case of *Norris* v. *Edmonton Borough Council* heard before the Divisional Court of the High Court was an appeal by way of case stated before the Magistrates Court.

An enforcement notice had been served on an owner because he had altered the use of land by using a domestic yard for the purpose of car breaking, car repairs and sale of cars. The notice required him to discontinue that use. The owner did not appeal to the magistrates within 28 days under S.23(4) of the 1947 Act and when he was prosecuted for failing to comply with the notice under S.24(3) of the same Act the justices refused to allow him to give evidence that a previous owner had similarly used the land to show that his own use did not constitute development.

The Divisional Court agreed with the justices and were at pains to point out that the case of *Keats* v. *London County Council*, 1954, had been virtually overruled by the later 1956 House of Lords decision in *East Riding County Council* v. *Park Estate (Bridlington), Ltd.* The grounds of appeal to the magistrates under S.23(4) were limited to cases where permission was granted or no such permission was required or that the conditions had been complied with or that the work required to comply with the notice was excessive.

The case of *Keats* v. *London County Council* had decided that if the notice specified development the only defence before the magistrates was that permission was not required for such development (i.e. permitted development) or had been given. It could not be questioned before the magistrates whether the notice correctly specified development. In the Keats case the decision was that an appeal could not be made to the magistrates on the grounds that owing to four years having elapsed the development had now become recognised. This decision is now held to be overruled by the East Riding case and in the future any allegations that the development is protected by the passing of time must come on appeal and cannot be raised as a defence to a subsequent prosecution.

The Court felt itself bound by its own decision in *Perrins* v. *Perrins* to decide this, although the Lord Chief Justice rather regretted that as this was a criminal matter the case could not go to the House of Lords to settle a number of obscure points on the section. Mr. Justice Slade did point out the difference of wording between S.24(1) and S.24(3) of the 1947 Act. In S.24(1) it was specifically stated 'if that person having been entitled to appeal to the Court under the last foregoing section failed to make such an appeal he shall not be entitled in proceedings under this subsection to dispute the validity of the action taken by the local planning authority upon any ground which could have been raised by such an appeal.'

In S.24(3) there was no such wording but in *Perrins* v. *Perrins* the Court had held that despite this the magistrates in a prosecution under that section could not hear matters that ought to have been raised before the magistrates earlier. If the matter had been able to be started *de novo* MR. JUSTICE SLADE considered that this was a point which the Court would have had to consider.

The case of *Binns* v. *Wilde* heard before Warwick Quarter Sessions Appeal Committee raised an interesting point. The appellants had been convicted of not complying with an enforcement notice in respect of the placing of a caravan or moveable dwelling on certain land. The enforcement notice required the appellants merely to remove the caravan and did not specify that the use should be discontinued.

The Court decided that the notice was not sufficient. The mere removal of the caravan did not necessarily constitute a discontinuance as the caravan could be removed and then brought back without constituting a discontinuance. The case illustrates the point that the wording of enforcement notices should be carefully scrutinised.

THE FUTURE OF THE GREEN BELT

Residents' Association Meeting

EFFECTS of the preservation of the Metropolitan Green Belt on the communities within it are twofold, MR. L. C. GALE, FRICS, MTPI, a planning expert, told Ashstead (Surrey) Residents' Association when discussing the problem at their half-yearly meeting, held recently.

First of all, he said, the community as a whole should retain its rural setting with agricultural or other open land on its perimeter, and secondly, because of this prohibition of perimeter development an intensification and change in character of parts of the already developed areas was bound to occur. For example, single family dwelling houses, over-large for present-day occupation, would convert either to flats or two or more houses, their grounds being developed with smaller houses. The more modest house with a large garden would set off its surplus land, while paddocks and other vacant land would be similarly disposed of for more houses.

Between the wars, said Mr. Gale, there was a migration from the rest of the country into the south-east area. This had been halted to some extent by Government action and the present state of full employment. There was now a perceptible desire on the part of industry to move out of the congested central London area, and land in quantity could only now be found in the Green Belt.

'In considering what sort of residential development would be suitable in a community within the Green Belt it should be borne in mind that the Green Belt is not a dormitory area for London and that increases in population are intended to be kept to a minimum,' he added. 'Clearly it would be unreasonable to place a ban on any new residential development, but to comply with the Green Belt policy, at any rate, for Surrey, such development should be limited in extent only and confined to the development of vacant plots, i.e., "infilling"; the "rounding off" of existing residential areas—and this should not be taken to envisage the development of large areas of agricultural or vacant land between land already developed for houses; redevelopment of over-large residential curtilages within the built-up area.'

Mr. Gale felt that most important in preservation or enhancement of the character of an area in the Green Belt was design, not only of the dwelling itself but of the roads which would give access to it. By the proper use of a site, the use of correct materials, the preservation of trees and the planting of new ones it was possible to create a group of dwellings of more interest and visual amenity than the site as previously existed. A 'flat iron' policy was to be deplored.

FIRE PREVENTION IN CHURCHES

FPA'S New Booklet

THERE were 1,132 fires in churches and other places of worship in the United Kingdom in the five years from 1951 to 1955. This is evidence enough that those who have charge of places of worship may benefit from some guidance on fire precautions. It is desirable that they should be aware of the most likely causes of fire, such as faulty, badly installed or ageing heating and lighting systems, and should have some plan of action ready to deal with fire.

Guidance on these and other matters can be found in this new Fire Protection Association booklet, which has been prepared in collaboration with the Central Council for the Care of Churches.

Copies of the booklet are being distributed by the Central Council to every church of the Church of England and to members of Diocesan Advisory Councils, Diocesan Architects and other interested persons.

The booklet is divided into two sections, the first containing precautions which can be put into effect by the church authorities and the second consisting of more detailed notes for architects, builders and contractors. It is illustrated by a number of photographs and interest is stimulated by the series of humorous drawings by 'Acanthus.'

Copies of the booklet 'Fire Prevention and Fire Fighting in Churches,' from the Fire Protection Association, 15, Queen-street, London, EC4 (price 2s. 6d.).

North Riding Schools

The North Riding Education Committee has announced a £325,000 school building programme for 1958-59. They have been told that the Minister of Education has decided that none of the North Riding projects would need to be deferred because of the financial policy of the Government. The programme includes a new primary school for 240 children at Catterick Camp, extensions to Richmond and Northallerton grammar schools and Scarborough girls' high school, and the final instalments of Stokesley grammar-modern and Eston grammar-technical schools.

Management Appreciation in the Industry

Architects', Surveyors' and Builders' Joint Conference

This account of the Management Appreciation Conference organised by the London Master Builders Association in association with the Royal Institute of British Architects and the Royal Institution of Chartered Surveyors and held at the Sundridge Park Management Centre, Bromley, Kent, from November 28 to 30 last, has been prepared by R. Baden Hellard, ARIBA, DipArch, who writes as follows:

THIS course was organised as a top level conference for members of the three organisations—LMBA, RIBA and RICS—to discuss: (a) the responsibilities of management; (b) some of the tools available to assist in discharging these responsibilities; (c) top-level co-ordination within the building team. It was attended by eight members from each body.

Introduction

Introducing the conference, MR. D. E. WOODBINE PARISH referred to the influence of the visit of the Anglo-American Productivity Team, some of whom were present on the course, and OEEC and EPA project 3022, which had resulted in the increased interest in management techniques in the building industry. He said management functions would become even more complex and it was inconceivable that Great Britain should fall behind other Western European states.

'This means that all factions of the building industry,' said Mr. Parish, 'architects, quantity surveyors and builders, must become introspective and put their own house in order rather than apply an extravertial criticism of each other.

'To achieve improved performance in building and to give better value for money, there must be interdependence and integration of the three factions, but looking at the general overall strategy of the building industry, the proper utilisation of our resources of manpower, mental power, materials and money must be made to attack the full work scope of the building industry, and just as we as a nation must be prepared to accede our sovereignty for co-existence, so must the three building factions.'

The architect, he continued, must be prepared to be scientist, technologist, designer and manager, and the industrial group, in which he included erectors, contractors and sub-contractors, must carry out operational research to achieve their best efficiency. He regarded as a third group the producers, suppliers and distributors of building materials, and said they also must be aware of the need for integration with the others if the building industry's client, as a nation, was to afford building at all.

Building was, he said, an industry which could be very rewarding to its participants, for it offered a creative satisfaction. It had a tradition and history behind it and it could be a dynamic force.

To understand the position today and the industry's importance in society, said Mr. Parish, we must remember that although the industry had no direct overseas competition it had an effect on all our exports, for 50 per cent. of the nation's capital investment programme—£2,000m. per annum at a rough approximation—is handled by the building industry and it could be seen how valuable a 10 per cent. increase in overall efficiency and productivity would be. Against this we should realise that before the war 1¼m. males were employed in the building industry, and during the war this was reduced to a strength of 325,000. In 1939 it was the second best paid industry whereas now it had dropped to ninth or tenth on the list. Thus it was obvious that in trying to rebuild the post-war strength in the face of better paid industrial competition, the building industry was at a considerable disadvantage, so perhaps it was not surprising that the increase in productivity in the building industry was only between 5-10 per cent. overall since 1939, whereas the United States building industry had increased its productivity over the same period by 54 per cent.

This was not just a matter of the American approach, for British agriculture had increased its productivity in the same period by 50 per cent.

This meant that the building industry had a low status in the public eye. If this status was to be increased, mutual trust, both commercially and professionally, must be built up again and we must overcome the resistance to change that was characteristic of the building industry.

We must appreciate that the industry's client was a changed one with different requirements, and many architects would think that there had been a decline of taste as well, but it was necessary for all sides to produce leaders, and to give leadership in moral qualities, to spark off enthusiasm and to produce a realistic approach to their responsibilities and accountability which, he said, could only be done by proper management study.

Imaginary Shareholders

MR. J. V. CONNOLLY, BEng, FRAeS, MIProdE, director of the Management Centre, suggested that the conference members should regard themselves as shareholders in the Holdings Company of Great Britain, Ltd., and should realise that the overall business of this holdings company was export. We must, therefore, be concerned with producing a more economic product remembering that the 10 per cent. per annum increase in productivity would produce £200m.

In the United States a house cost 10 per cent. to 15 per cent. more than in the UK, yet building tradesmen got 25s. an hour against our 6s. an hour and this, he said, was a measure of their productivity level. He showed this table of labour productivity between 1945 and 1956:

1948 equals	100%
Mining and Quarrying Industry	111%
Building	118%
Total overall	124%
Vehicles	126%
Glass	129%
Engineering and Shipbuilding	130%
Steel	131%
Chemicals	156%

Furthermore, he said that in his experience the chemical industry was the most alive to its own inefficiency.

Taking 1938 as 100 per cent., the cost of capital replacement of buildings and civil engineering works was 340 per cent. in 1957, and the equivalent figure for mechanical and electrical plant 415 per cent.

He then showed two interesting graphs. The first, giving the number of administrative employees per hundred workers, showed that in 1900 the USA had 10 per hundred, and in 1950, 24 per hundred, whilst the UK in 1910 had 7 per hundred, and in 1950 16 per hundred. Sir Ewart Smith, of ICI, had frequently referred to 'the high cost of low overheads,' which was supported by the second graph which showed the output per worker related to these administrative overheads, in that in the US the rate of increase had been considerably greater than their overheads to produce this output, whilst in the UK the rate of increase had been less than the rate of increase in administrative employees. He put forward the theory that this was because the numbers of supervisory and administrative employees in this country were as yet below the threshold of effectiveness.

Functions Defined

MR. GIBSON, MA, AMIMechE, defined a manager as one who directs or supervises the work of others, and suggested five steps in defining his job and exercise of management. He said you should:—

(1) *Analyse Responsibilities* — for each resource at your disposal.

(2) *Determine the Form of Responsibility.* Is it: Directing, Supervising, Advisory, Executive or Operating?

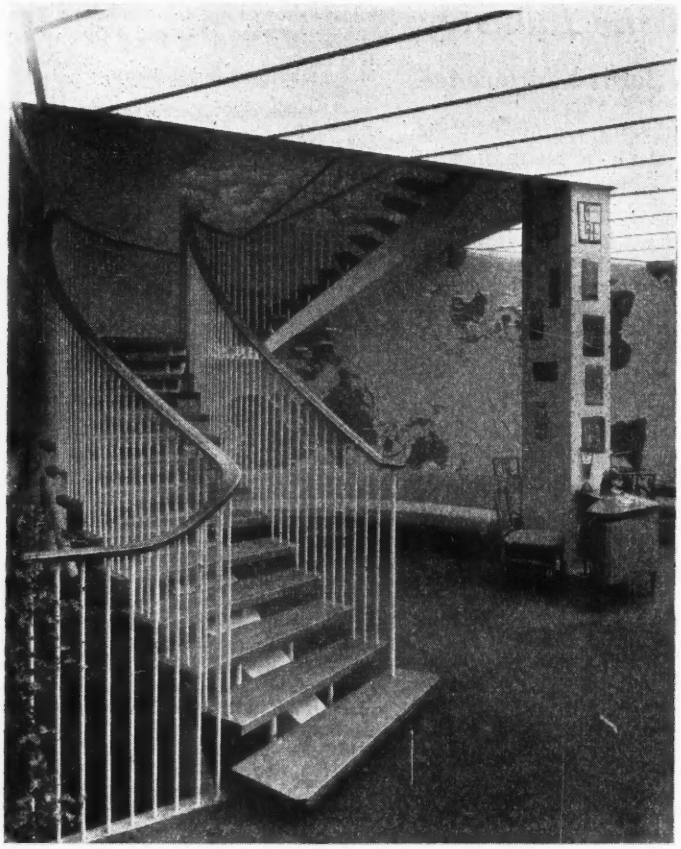
(3) *Plan Ideal Grouping of Responsibilities in Man Loads.* (a) Span of Control; (b) Span of co-ordination and allocation time proportion.

(4) *Analyse Skills and Capabilities of Existing* Staff: Job evaluation procedure.

(5) *Relate Skills to Optimum Grouping.*

You should then restate objectives, policy and framework to individual departments, and individuals, in a suitable context, and then establish accountability.

He said that a fundamental characteristic of an organisation was growth. It was composed of individuals who in themselves 'grow' with knowledge, and the organisation must either accommodate this growth of the individuals or accept excessive staff turnover, or ultimate frustration of staff, due to the lack of scope for development. He emphasised the



New London headquarters for the Australian QANTAS Airline have recently been opened in Piccadilly. The architects are Messrs. Yates, Cook & Darbyshire, and the builders McLaughlin & Harvey, Ltd. The staircase is by Messrs. A. J. & J. D. Harris

value of organisation charts which should illustrate diagrammatically the relationship between different functions within an organisation, and not—as was so often the case — define studies on a vertical scale.

He emphasised that there was a common basic responsibility to all levels of management. Once a definite policy framework had been produced for a manager, this could be stated thus:—

A Manager's Cycle of Responsibility, when working towards his defined objective, within the policy framework provided, is as follows:—

1. TO INTERPRET AND PLAN.—Restate the defined objective in terms of each of the activities within his overall control. Define, for each of the managers reporting to him, the policy framework within which each assigned objective is to be achieved. Note: The degree of authority delegated to a manager is controlled by the extent to which procedures are defined within the policy framework.

2. TO CO-ORDINATE AND MOTIVATE.—Ensure 'personal' co-operation between the managers reporting to him. Organise a system of communication. Provide the motivating force.

3. TO CONTROL. — Through appropriate performance measurements.

The decisions involved in carrying out these responsibilities cannot be delegated.

Speaking on 'Work Study and Its Application,' MR. S. D. MCDONALD, MBE, BSc, ran quickly through the history of his subject, referring to its development through the twin fields of time study begun, in 1883, by F. W. Taylor in the United States, and motion study, in 1895, by Frank Gilbreth, who was a builder and had been first struck by the need for a serious study of the bricklayer's methods.

Mr. McDonald showed how the analytical approach of work study in first selecting the work to be studied—recording the present method—examining the present method—developing the best methods — installing the best methods — and then maintaining the best methods could offer savings and could improve work that was undertaken whether in the office or on the site. He dealt briefly with such items as flow processes charts, activity sampling, multiple activity charts, Crono Cyclegraphs, the symbols used for operation and flow processes charting, and with the recording techniques generally used.

The speaker showed a film on how these techniques could be applied to any job, although the two examples shown were laying concrete foundations on a building site and the hot dip galvanising process for zinc water tanks.

No précis could do justice to the content of these lectures, which were in themselves a quick review of the whole field of work study technique, but no doubt was left in the minds of the conference as to the validity of work study to the whole of the building industry.

Lack of 'Know-why'

DR. D. G. R. BONNELL, PhD, MSc, head of Building Operations Research Unit, talking on building research and its contribution to improved performance, said that in the building industry there was a very great deal of 'know-how' but there seemed to him to be an almost total absence of 'know-why.' He examined the industry from three angles:—

(1) *Design Side.* — The responsibility for the definition of functional requirements which, he said, was a matter of the factual behaviour of stress and strain, sound, light, etc.

(2) *Materials Producing, both the goods and equipment.* — This included the natural and component type materials, and he thought that too little was known, not only of the performance of these materials individually, on which subject the various industrial development associations had carried out research, but particularly the performance of materials and components in conjunction with each other. He instanced the problems that everyone had had of the behaviour of mastics in conjunction with glass and metal and timber for curtain walling, and so on through a large number of examples.

(3) *Production and Management.* — Here the contracting organisations including sub-contractors and specialists were included, as was assembly on site where the operatives and sometimes supervisors did not know the underlying reasons why things were done as they were. There was scope to ask why a job was done before deciding which was the best mechanical aid to introduce. There was reason to analyse the organisation both on the site, and of the builders' set-up generally, and there was need for better communications between ideas as well as instructions.

Dr. Bonnell thought that quantity surveyors had, in particular, drawn away from the building industry's problems, but in general there was a serious need for all three sides to have a greater realisation of the building problem in its relation to national requirements.

Dr. Bonnell was asked why it took the Building Research Station so long to give the builder an answer to a problem, and he replied that this was a generalisation that should not be made. In some cases the answer to a particular problem was known and could be given immediately by reference to the appropriate officer of the station. In other cases the answer had to be found by a sifting of all the information and resources that the station possessed, and this could take

three weeks, but in other cases the problem might be one that required three years' original research to find an answer.

He assured his audience that the Station were very conscious of the need to have the answer as soon as possible, but if a department was to be set up to deal with these problems 'off the cuff' as it were, this department would need greater resources than the Station as a whole possessed at the moment. He thought it was the duty of every professional man to have some means of quick scrutiny of all new information and results of research that were published in the technical Press and elsewhere, and particularly to have his own method of quick reference.

Communications

MR. A. C. LEYTON, BA, LIB, senior lecturer in Liberal Studies at the Northampton College of Advanced Technology, spoke of the need for effective communications in industry. He said that in Great Britain in the 20th century there was a need for social unity between groups, and that conventions were often not the most suitable means of establishing communication, whether for ideas or instructions between the different levels of management. This was vital because technical efficiency could only proceed with equal development of the social or human factors. We must have co-partnership in industry and this must, or should, rely on assent. Thus there should be staff participation in this co-partnership.

Fifty years ago obedience from employees was commanded by the fear of the long unemployment line. This was no longer the case. Obedience could come from dependence, from custom, from fear, or from the belief in the properness of the instructions, and this, therefore, was an obedience of assent. He stressed that exchange of information between different levels of management must include the bad as well as the good. It was no use letting a man go in ignorance for months or years of your dissatisfaction with his performance and then dismissing him without warning.

We should realise that a message, whatever it may be, must be transmitted in a form most suited and understood by the recipients. In Mr. Leyton's experience in engineering industries he had found that an engineering executive spent 80 per cent. of his time talking on the telephone or to junior executives, and 20 per cent. reading or writing, and yet many had never considered the importance of proper communication. It was a fact, he said, that a 27-word sentence was understood by only 4 per cent. of the working population, whereas the comic strip technique was appreciated by 95 per cent. The other 5 per cent. did not matter anyway!

Mr. Leyton said that communication was not the art of self-expression. The meaning of a sentence must not be 'optional'; it must have a purpose and it must see that its purpose is achieved. We should remember, too, that it was not only the words that were important. Context and the relationship between the sender and the receiver also would have an effect on interpretation of the message.

In a later discussion session led by Mr. Leyton, the conference members discussed the human aspects of this problem.

MR. E. D. JEFFERISS MATHEWS, OBE, FRIBA, also stressed that the industry must ensure the proper spending of the national budget. The processes of building he defined as:—

(1) Establishing the client's requirements.

(2) Designers to fit these requirements.

(3) Operations on site to materially produce these requirements.

(4) The necessary labour that this entails.

He said that those in the building industry must examine more critically the ways of arranging contracts, and more particularly amending them, and he said that there must be an extra phase in the normal cycle of building operations between the architect and contractor which he called the 'builder's takeover period,' during which time the architect should give the builder all the information he required, and let him then work out his own ways of doing things so that the architect would then interfere less with operations on site. He emphasised that we must expect a higher level of integrity from builders so that the need for 'watch dog' supervision by the architect on the design aspects, and by the quantity surveyor on the financial aspects, was eliminated.

He thought that both architects and quantity surveyors were ahead of the builders in this respect, and that until these standards of integrity were commonplace, perhaps under a code of conduct, the professional side of the industry would need to watch over the building owner's interests in this way.

Summing up

MR. WOODBINE PARISH summed up the course in a final session, and once again emphasised the need for management training to encourage the philosophy of management and the proper direction of human effort. He agreed that there should be an increase in ethics on the part of the builder, and he would not entirely leave out the professional man from ethical responsibility. He was not sure that their efficiency was all that it should be for he thought that there was not such a great difference between the sin of omission and the sin of commission.

Management training was a fundamental for discharge of managerial functions, and the sooner this was realised by all sides of the industry the better.

Each lecture was followed by a discussion period which, as the course proceeded, became more valuable as mutual confidence was established between the conference members. Self-criticism and criticism of the other sides of the industry were exchanged freely, and certainly led to the development of ideas at a far greater rate than could have occurred outside a residential course of this nature.

Discussions followed each lecture and were chaired by Colonel K. J. G. Pearce, TD, MIOB, vice-president of LMBA; Mr. Kirby Laing, president, LMBA; and Mr. Connolly, director of the Management Centre. In these discussions almost every talking point common to the industry to-day was covered, questioned, criticised and more often than not a constructive thought emerged. Problems of the all-in service, closer integration of architect, quantity surveyor and builder, and the inability of the architect to be appointed to boards of building companies, the need for integration with the manufacturer, were discussed, as also were the feeding of information on costs, performance of materials, and knowledge generally, from all levels, and from all parties, and not least the need for feedback of this information from the point of use to the point of origination.

At the end, representatives of the architects and quantity surveyors thanked the LMBA for having held such a successful and important course and conference. There can be no doubt that if building contracts could be run in such an atmosphere of mutual good will and co-operation, the aims of the conference would have succeeded beyond expectation, and the necessary increase in building productivity would almost certainly follow.

DIPLOMA IN TECHNOLOGY

Nearly 1,000 Students Attending Courses

THE National Council for Technological Awards, in its first report published on December 5, states that the Government's plan to produce the necessary supply of technologists through the technical colleges can only succeed if the colleges, industry and the Council are able to pool their experience and ideas and produce suitable courses in the various technologies.

The report describes the work of the Council since it was set up at the end of 1955 under the chairmanship of Lord Hives, to create and administer for technical college students awards of high standard, equivalent, in fact, to university honours degrees.

In his foreword to the report, Lord Hives states that on November 21 there were 965 students at 11 colleges attending 37 courses recognised as leading to the Diploma in Technology.

As part of the procedure for the approval of courses, members of the Council visited and reported on the colleges concerned.

'No single college,' states the report, 'satisfies fully the Council's requirement, and in some cases good work is being done in singularly unsuitable accommodation. The most common deficiencies are in accommodation for project work and private study, staff work rooms, laboratories for research by staff, libraries, and amenities for social activities, but the substantial amount of new building either now in progress or planned to start in the immediate future gives firm promise that the majority of these deficiencies will have been met by the time that the renewal of the recognition of courses is considered in five years' time.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchant's warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	7	1
Pit Sand	,,	1	4	6
Washed Sand	,,	1	7	8
¾ in. Shingle	,,	1	4	0
¾ in. Broken Brick	,,	1	0	9
Pan Breeze	,,		16	9
Fine or Coarse Foamed Slag Aggregate	per ton	3	0	0

2 yds. of fine and 2.6 yds. of coarse per ton.

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	per ton	5	12	0
1 to 6 tons, site	,,	6	4	0
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	6	2	6
1 to 6 tons do. site	,,	6	14	6
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Sulphate Resisting Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots ...	,,	8	12	0
Other colours according to colour.				
In 4-ton lots from 310s. 0d. to 780s. 0d. per ton.				
White Portland Cement	,,	13	17	6
Under 1 ton	per cwt.		16	11
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	7	4	6
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £11 10s. 0d. to £14 5s. 0d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	15	14	6
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	17	6
Moler Mortar Powder for Flue Bricks (London sites)	per cwt.	1	8	6

BRICKS

Full Loads.

		£	s.	d.
First Hard Stocks	per 1,000	13	14	6
Second Hard Stocks	,,	12	13	6
Mild Stocks (Kiln Burnt)	,,	9	4	0
Mild Stocks	,,	8	19	0
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½in. Nominal Fletton Bricks to sites in W.C. District Commons	,,	5	18	0
Cellular do.	,,	5	18	0
Keyed do.	,,	6	0	0
Rustics	,,	7	10	0
Cellular Rustics	,,	7	10	0
Single Bullnose Commons	,,	7	12	6
Sandfaced	,,	8	10	0
Tuscans	,,	9	5	0
Saxons	,,	9	13	0
Golden Buffs	,,	10	0	0
Dapple Light	,,	10	7	6
Best Blue Pressed Staffs (London Stations) ...	,,	29	15	6
,, Bullnose (London Stations)	,,	30	9	6
Blue Wire Cuts (London Stations)	,,	26	15	6
Midhurst Lime Bricks (London sites)	,,	10	15	6
Uxbridge Whites (London sites)	,,	10	2	0
Special Purpose Sandlime Bricks (London sites) ...	,,	7	18	6
2½ in. Best Stourbridge Fire Bricks (London Stations)	,,	29	9	9
3 in. do. (London Stations)	,,	35	7	9
2½ in. Moler Flue Bricks (London sites)	,,	35	0	0
2½ in. Machine-made Sandfaced Red Facings (London sites)	,,	15	18	6
2½ in. Machine-made Multi Red Facings (London sites)	,,	16	3	6
2½ in. Hand-made Sandfaced Red Facings (London sites)	,,	16	3	6
2½ in. Hand-made Sandfaced Multi-Colour Facings (London sites)	per 1,000	16	18	6
Hand-made Sandfaced Cherry Red Facings, Berkshire district (London sites)	,,	18	14	0
Hand-made Sandfaced Multi-Colour Facings. Berkshire district (London sites)	,,	18	14	0
Rubber Bricks for gauged arches (London sites) ...	,,	42	17	6
2½ in. Surrey Clamp Burnt Multi Stock Facings (London sites)	,,	14	4	0
2½ in. Surrey Kiln Burnt Multi Stock Facings (London sites)	,,	15	16	0
Glazed Bricks (London sites), White, Ivory, Brown— Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0

Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 32½% for Best quality and plus 32½% less 10% for Second quality.

PARTITION SLABS, etc.

Delivered Central London Area. (W.C. District.)

	Minimum lorry loads		£	s.	d.
HOLLOW CLAY PARTITION BLOCKS (Keyed)					
*2 in.	140 yds.	per yd. sup.		4	5
*2½ in.	140 yds.	,,		4	8
*3 in. (3 cavity) ...	120 yds.	,,		5	5
BUILDING BLOCKS (Keyed)					
*3 in. (6 cavity) ...	110 yds.	,,		5	7
*4 in. (6 cavity) ...	95 yds.	,,		6	10
6 in. (8¾ in. × 5¾ in.)	1,250 blocks	per 1,000	26	18	0
*Half blocks at no extra charge.					
CLINKER CONCRETE					
2 in.	100 yds.	per yd. sup.		3	9
2½ in.	85 yds.	,,		4	4
3 in.	75 yds.	,,		5	3
4 in.	55 yds.	,,		6	5
CRANHAM					
2 in.	... ...	,,		6	9
2½ in.	... ...	,,		7	5
3 in.	... ...	,,		8	9
4 in.	... ...	,,		10	9
4½ in. Load bearing quality ...	... ...	,,		11	10
MOLER PARTITION BLOCKS					
2 in.	150 yds.	,,		15	0
2½ in.	120 yds.	,,		15	6
3 in.	100 yds.	,,		16	0
4 in.	90 yds.	,,		19	0
LIGHTWEIGHT CONCRETE BUILDING AND PARTITION BLOCKS OF VARIOUS SOURCES OF MANUFACTURE					
2 in.	100 yds.	,,		5	8
2½ in.	80 yds.	,,		6	9
3 in.	65 yds.	,,		7	11
4 in.	50 yds.	,,		9	4
4½ in.	44 yds.	,,		9	11
6 in.	33 yds.	,,		13	5
THERMALITE-YTONG PARTITION BLOCKS					
2½ in.	144 yds.	,,		7	0
THERMALITE-YTONG LOADBEARING INSULATING BLOCKS					
3 in.	120 yds.	,,		8	5
4 in.	90 yds.	,,		11	0
5 in.	72 yds.	,,		13	9
6 in.	60 yds.	,,		16	6
8½ in.	42 yds.	,,	1	3	8
FLOOR BLOCKS AND FILLER TILES					
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads		per 1,000	34	1	0
4 in. do		,,	36	10	0
5 in. do.		,,	43	15	0
6 in. do.		,,	49	19	0
7 in. do.		,,	61	8	0
8 in. do.		,,	71	19	0
12″ × 3″ × ⅝″ Filler Tiles in multiples of 10 tiles		per 1,000 multiples	42	15	0
12″ × 4″ × ⅝″ do.	do.		73	15	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Revised Standard List (Nov., 1956) prices delivered London Area.

Delivered ex Merchants Wharf or Depot or Manufacturers Works.	Over 2 tons	Over 100 pieces Under 2 tons	Under 100 pieces Under 2 tons
Best Quality ...	−2½%	+15%	+22½%
BSS Best do. ...	+10% −2½%	+10% +15%	+10% +22½%
Tested Quality ...	+37½% −2½%	+37½% +15%	+37½% +22½%
BSS Tested do.	+47½% −2½%	+47½% +15%	+47½% +22½%

STONEWARE DRAIN PIPES, etc.—*continued*

	£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths) ... per 1,000	11	10	6
4 in. do. ... ... ,,	15	3	6
6 in. do. ... ... ,,	31	9	0
9 in. do. ... ... ,,	59	13	0

DAMP COURSE

Hessian base bitumen 7 lb. per yd. sup. in 24 ft. rolls cut to wall widths in lots of £6 value and over delivered London area ... ... per yd. sup.		3	5½
Asbestos base ditto 7 lb. per yd. sup. do. do. ,,		5	3
Lead lined bitumen ditto 9½ lb. per yd. sup. do. ,,		12	2
18 in. × 9 in. British damp course slates ... ... per 1,000	43	8	11
14 in. × 9 in. do. do. ... ... ,,	32	8	2
9 in. × 9 in. do. do. ... ... ,,	18	18	9
18 in. × 4½ in. do. do. ... ... ,,	19	19	9
14 in. × 4½ in. do. do. ... ... ,,	15	18	3
9 in. × 4½ in. do. do. ... ... ,,	10	14	3

STONE

Bath Stone—			
Monks Park ... ... per ft. cube		9	4
St. Aldhelm Box Ground ... ... ,,		10	7
Delivered in railway trucks at South Lambeth B.R. Western Region.			
Doulting Stone Random Blocks. Delivered London area ,,		9	2
Beer Stone. Delivered London area ... ... ,,		8	9
Portland Stone—			
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region ... ... ,,		8	8
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.			
9 in. × 3 in. Rubbed, weathered, throated and stooled cills ... ... per ft. cube	4	1	9
12 in. × 6 in. do. do. ... ... ,,	2	18	3
12 in. × 3 in. Plain coping, twice throated ... ,,	2	5	3
12 in. × 3 in. Weathered and twice throated coping ,,	3	0	3
14 in. × 6 in. do. do. ... ... ,,	2	14	3
4½ in. × 9 in. Plinth rubbed on top and face ... ,,	2	8	6
3 in. sawn two sides Slabs, random sizes ... ... per ft. sup.		8	8
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ... per ft. cube	1	9	9
do. do. fair one edge for fair faced brickwork ... ... ,,	1	15	3
Hard York—			
12 in. × 2 in. Square Steps, rubbed on top and edge per ft. run		10	6
14 in. × 3 in. Round-nosed Steps, rubbed on top and front ... ... per ft. cube	2	15	6
12 in. × 6 in. Plain Steps, rubbed top and front ,,	2	8	6
2 in. Rubbed and Jointed Paving, given sizes ... per ft. sup.		9	9
2 in. Sawn Paving, edges squared, in random sizes per yd. sup.	3	8	6

TILES AND PANTILES

Delivered London area by road in 6 tons or over per 1,000			
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	19	0
Hand-made Pantiles Berkshire district	55	18	0
Hand-made Double Roman Bridgwater district	60	11	6
Hand-made 10½ × 6½ tiles Berkshire district	15	9	0
Machine-made 10½ × 6½ Staffordshire district	14	13	6
Hand-made Hip and Valley tiles per doz.	1	11	3
Machine-made Hip and Valley tiles do.	1	9	6
Concrete tiles 10½ × 6½	8	10	0
do. Interlocking (49S)	19	16	6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.			
24 × 12	143	15	10
22 × 12	116	17	4
22 × 11	105	10	10
20 × 12	99	0	1
20 × 10	94	16	9
18 × 10	65	16	9
18 × 9	57	14	0
16 × 10	51	17	0
16 × 8	40	11	9

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—					
Joinery quality	Ex Wharf		per standard	£115 to £140	
Carcassing quality ...	do.		,,	£95 to £100	
1 in. Tongued and Grooved Flooring	do.		,,	£108	0 0
Hardwood—					
Mahogany—African S.E.	do.		per ft. cube	1	10 0
do. Honduras	do.		do. ,,	3	5 0
Oak European	do.		do. ,,	2	5 0
do. Japanese	do.		do. ,,	2	10 0
do. English Logs sawn	do.		do. ,,	2	0 0
Teak 8 in. average S.E.	do.		,,	3	17 6
Walnut African Logs sawn	do.		,,	1	5 0

DOORS (in Lots I-11)

	£	s.	d.
Delivered London area			
1¾ in. 4 Horizontal Panel. Pattern 4 in. deal			
2 ft. 0 in. × 6 ft. 6 in. ... ... each	1	16	0
2 ft. 3 in. × 6 ft. 6 in. ... ... ,,	1	17	6
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	1	18	6
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	0	6
2 in. do. but top panel open. Pattern 4 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	9	0
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	11	6
2 in. 2 Panel top panel open. Pattern 2 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	3	0
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	5	0

SUNDRIES

Delivered London area.			
1 in. Wood Wool Slabs 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton) ... ... per yd.		6	2
1½ in. do. (67 yds. to 1 ton) ... ... ,,		8	0
2 in. do. (52 yds. to 1 ton) ... ... ,,		9	9½
2½ in. do. (45 yds. to 1 ton) ... ... ,,		11	3
3 in. do. (39 yds. to 1 ton) ... ... ,,		12	7½
Quantities under 1 ton add 1d. per ½ in. of thickness.			
½ in. imported insulation Board, quantities over 5,000 sq. ft. per 100 sq. ft.	2	2	6
¼ in. Hardboard do. ... ... ,,	2	0	0
⅜ in. do. do. ... ... ,,	2	17	6
⅛ in. Asbestos Flat Building Sheets ... ... per yd. sup.		4	3½
¼ in. do. ... ... ,,		5	10½
Roofing Felt 1-ply ... ... ,,		1	9
do. 2-ply ... ... ,,		2	2½
Best Scotch Glue in slabs ... ... per ½ cwt.	5	0	0
do. pearl ... ... ,,	5	5	0
Croid Glue ... ... 28 lb.	2	6	0
Cut Nails 3 in. (1-ton. lots) ... ... per ton	78	10	0
do. 4 in. and up (1-ton lots) ... ... ,,	75	0	0
Wire Nails 3 in. (4-cwt. lots) ... ... per cwt.	3	13	11
do. 4 in. and up (4-cwt. lots) ... ... ,,	3	13	3

METALS

STEEL JOISTS, ETC.

Basis Joists—			
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in., 12 in. × 6 in. plain cut to lengths delivered London area ... ... per ton	51	2	6
Extra for sizes			
3 in. × 1½ in. 4 in. × 1¾ in. ... ... ,,	3	10	0
3 in. × 3 in. ... ... ,,	2	10	0
4 in. × 3 in. ... ... ,,	2	5	0
10 in. × 4½ in. ... ... ,,	1	10	0
5 in. × 2½ in. 5 in. × 3 in. ... ... ,,	1	15	0
4½ in. × 1½ in. ... ... ,,	3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. ,,		15	0
6 in. × 3 in. 24 in. × 7½ in. ... ... ,,	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. }			
9 in. × 4 in. 10 in. × 5 in. ... ... } ,,	1	5	0
12 in. × 5 in. 22 in. × 7 in. ... ... ,,	1	0	0
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in.			
14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in.			
15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in. } ,,		10	0
16 in. × 8 in. 18 in. × 6 in. 18 in. × 7 in.			
18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in.			
Steel angles average price ... ... ,,	53	2	6
Steel tees average price ... ... ,,	54	2	6
Fabricated work delivered London—			
R.S. Joists cut and fitted ... ... ,,	70	12	6
Compound girders ... ... ,,	77	0	0
Stancfiions ... ... ,,	82	10	0
Compound stanchions ... ... ,,	87	0	0
In Roof Work—Trusses and Purlins ... ... ,,	100	12	6
Average prices not for awkward work.			
Angle cleats and ⅜ in., ½ in. and ⅝ in. bolts average price London area ... ... per cwt.	5	19	0

FERRO-CONCRETE BARS

Mild Steel Ferro-Concrete bars British manufacture to BSS785 ex London Stock ¼ in. diam., and upwards ... ... per ton	49	17	6
¼ in. diam. ... ... ,, extra	8	12	6
⅜ in. do. ... ... ,,	6	12	6
½ in. do. ... ... ,,	4	12	6
⅝ in. do. ... ... ,,	3	2	6

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts :

Galvanised Tube—	Under 1 ton	Over 1 ton	W.I. Fittings	Malleable Fittings
Class A	+23½%	+20½%	Light +48 %	Malleable List
Class B	+36½%	+33½%	Heavy +55½%	−20½%+40%
Class C	+56½%	+53½%		
Black—				
Class A	+ 4½%	+ 1½%	Light +35½%	Malleable List
Class B	+18½%	+15 %	Heavy +43½%	− 20½%
Class C	+34½%	+31½%		

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	4/0½	3/7	1/–
3½ in.	4/4½	3/11	1/–
4 in.	5/8	4/5	1/7
4½ in.	6/3	4/11	1/10
5 in.	6/11½	5/4	2/2

METALS—*continued*

C.I.O.G. Gutters

	Gutters	Nozzle	Stop Ends
3 in.	5/2½	4/8	1/3
3½ in.	5/10	4/8	1/7
4 in.	6/5	4/11	1/10
4½ in.	6/11½	5/8	2/2
5 in.	7/7½	6/5	2/6

C.I. Rain-water Pipes

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	8/7½	4/5	6/4
2½ in.	8/7½	4/11	8/6
3 in.	9/8½	6/2	9/2
3½ in.	11/0½	7/3	11/–
4 in.	12/9	8/9	13/1

L.C.C. Coated Soil Pipes

2 in.	9/8½	7/7	9/2
2½ in.	10/4	8/5	11/5
3 in.	11/7	9/2	13/7
3½ in.	12/11½	11/5	15/10
4 in.	14/9	12/9	18/8

Above prices for gutters, rain-water and soil pipes for under 5 cwt. lots only. Lots over 5 cwt. see List No. 3300 dated February 1, 1955, plus 22½% and tonnage allowance. 4-ton lots 5 per cent., 2-ton lots 2½ per cent.

L.C.C. Coated Drain Pipes

In 9-ft.

	cwt. qt. lb.	per yd.	Bends	Branches
4 in.	1 1 17	35/3	23/9	42/–
6 in.	2 0 1	51/7	63/9	101/–

Asbestos Rain-water Pipes and Fittings

All less 17½ per cent. discount.

	2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths ...per yd.	4/7	4/10½	5/11	7/10
Shoes ... ... each	3/–	3/3	3/10	5/2
Single Branches ... ... „	4/8	5/6	6/7	9/2
Bends square or obtuse ... „	3/3	3/7	4/8	6/7
Swan Necks 4½ in. proj. ... „	3/7	4/8	5/2	7/3
„ 6 in. „ ... „	3/10	5/2	5/10	7/10

Asbestos O.G. Gutters and Fittings

	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths ...per yd.	4/4	4/9½	5/9	6/10½
Drop ends ... ... each	3/6	4/–	4/9	5/5
Stop ends ... ... „	1/1	1/2	1/3	1/5
Angles ... ... „	3/7	4/1	5/–	5/10
Nozzles ... ... „	3/6	4/–	4/9	5/–
Union Clips ... ... „	1/9	2/1	2/6	2/11

Asbestos Half-Round Gutters and Fittings

		3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths	per yd.	3/0½	3/7½	3/8½	4/4½	6/1
Drop ends ...	each	2/6	3/–	3/3	3/7	5/2
Stop ends ...	„	1/–	1/1	1/2	1/3	1/5
Angles	„	2/10	3/3	3/7	3/10	5/2
Nozzles ...	„	2/6	3/–	3/3	3/7	5/2
Union Clips ...	„	1/3	1/4	1/5	1/7	2/5

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	52 17 6
Mild Steel Bars	47 12 6
Mild Steel Hoops	46 14 6

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	62 14 6
24 gauge	65 4 6
26 gauge	68 4 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	69 10 0
24 gauge	73 0 0
26 gauge	78 5 0
Galvanised flat sheets C.R. and C.A.—	
20 gauge	71 0 0
24 gauge	74 10 0
26 gauge	79 15 0

ALUMINIUM AND ALUMINIUM ALLOYS

(Base prices)	£ s. d.
Sheet BS 1740 S1C 18 SWG (36 in. wide) ... per lb.	2 11
Sheet BS 1470 NS3 Utility 18 SWG (36 in. wide) „	2 8½
Coiled strip BS 1470 S1C 18 SWG (24 in. wide) ... „	2 10
Coiled strip BS 1470 NS 3 Utility 18 SWG (24 in. wide) ... ... „	2 8
Coiled strip for flashing 99.7% purity 22 SWG (12 in. wide) ... ... „	3 0½
Corrugated sheet BS 1470 NS 3 Utility Circular Profile 8 ft. × 32 in. × 20 SWG ... ... per sheet	1 12 6
Corrugated sheet BS 1470 NS 3 Utility Industrial Profile 8 ft. × 31½ in. × 20 SWG ... ... „	1 18 1
Corrugated sheet BS 1470 NS 3 Utility Mansard Profile 8 ft. × 31½ in. × 20 SWG ... ... „	1 11 7
Extruded section BS 1476 E1C simple moulding ... per lb.	2 9
Extruded section BS 1476 E1C 1 in. diam. round „	2 6½
Extruded section BS 1476 HE1WP simple angle ... „	3 0
Extruded section BS 1476 HE10WP 1 in. diam. round „	2 11
Tubing BS 1471 T1C 1½ in. O/D × 20 SWG ... „	4 4½
Tubing BS 1471 HT10WP 1½ in. O/D × SWG ... „	5 8

PLUMBERS' BRASS WORK, etc.

Delivered in London area.

M.O.H.

All per doz.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	87/–	128/8				
Toilet bib cocks for iron ...	109/–	158/5				
Screwdown stop cocks for iron	66/–	95/9	188/–	363/–	522/6	917/6
do. with two unions for lead	89/–	132/–	234/4	472/–	623/6	1389/6
Double nut boiler screws ...	18/8	26/5	47/6	48/6	67/–	93/6
Heavy Croydon ball valves ...	77/–	193/6	312/5	568/8	734/10	—
Plumbers' union brass lead to iron	19/6	23/6	38/6	52/10	70/6	165/–

	1½ in.	1¾ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	33/–	40/8	59/6	92/5	118/10	155/3
Brass sleeves		31/11	31/11	56/2	74/10	91/5
	1½×6 lb.		1½×6 lb.	2×7 lb.	3×7 lb.	
Lead P. trap with brass cleaning screws	64/10		81/–	129/6	221/6	
Lead S. Trap do....	78/6		97/3	159/6	286/3	

Solder	s. d.
Plumbers' ... ... 1 cwt lots 332/– 14 lb. lots per lb.	3 6
Tinmen's ... ... „ „ 408/– „ „	4 1
Blow pipe ... ... „ „ 411/– „ „	4 3

Copper Tubes and Sheets

Copper tubes BSS 659/1944 on the basic price of 21⅝d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.		Extra d.		d.
½ in. × 19 gauge ...	14½	Total per lb.	36⅜	approx per ft.	9½
¾ in. × 19 „ ...	13	„ „	34⅜	„ „	13½
1 in. × 18 „ ...	11½	„ „	33⅜	„ „	20½
1¼ in. × 18 „ ...	10⅞	„ „	32½	„ „	24½
1½ in. × 18 „ ...	10⅞	„ „	32½	„ „	29½
2 in. × 17 „ ...	12½	„ „	34⅛	„ „	47½

Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras ... ... per ton £217 0 0

Zinc

	£ s. d.
Sheet Zinc 10 gauge (25 SWG) 5 cwt. lots upwards per cwt.	6 18 6
do. 12 gauge (23 SWG) „ „	6 16 0
do. 14 gauge (21 SWG) „ „	6 14 9

Brass Tubes

Brass tubes basic price, plus gauge and manufacturing extras ... ... per lb.	1 6

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

	£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards per ton	112 10 0
Lead Water Pipe in coils ... ... „	114 15 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia. ... „	116 5 0
„ over 4 in. dia. ... ... „	118 5 0
Lead Gas or Untinned Compo pipe ... ... „	116 5 0
Extras over Basis for quantities under 1 ton	
5 cwt. and under 1 ton ... ... per cwt.	2 0
3 cwt. do. 5 cwt. ... ... „	4 0
1 cwt. do. 3 cwt. ... ... „	6 0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £63 10s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

Coarse Pink in 1-ton loads and over Delivered on Site per ton	8 9 6
do. White do. do. ... „	8 19 0
Siripite Coarse do. do. ... „	8 10 6
do. Fine do. do. ... „	8 18 6
Blue Lias Lime in 6-ton loads ... ... „	6 14 6
Hydrated Lime (Grey) do. ... ... „	5 17 6
do. (White) do. ... ... „	6 5 0
Lump Lime (Grey) do. ... ... „	5 7 0
do. (White) do. ... ... „	5 14 6
White Keen's or Parian Cement in 1-ton loads ... „	12 4 6
Pink Keen's or Parian Cement in 1-ton loads ... „	11 19 3
Granite Chips in 6-ton loads ... ... „	2 8 6
Hair ... ... per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick, 600 yds. and over in one delivery. Delivered site ... per yd.	2 5
1,200 yds. ... ... „	2 4
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site ... ... „	3 0
1,200 yds. ... ... „	2 11½
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft. ⅜ in. thick, 600 yds. and over in one delivery Delivered site ... ... „	2 8
1,200 yds. ... ... „	2 7
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site ... ... „	3 3
1,200 yds. ... ... „	3 2½

PAINT AND DISTEMPER

		£	s.	d.
Delivered London area				
Ceiling Distemper	per cwt.	1	7	6
Washable Distemper	per cwt.	5	5	0
Gloss Paint	per gal.	2	12	0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3	11	0
LEAD PRODUCTS AND OILS				
Ground White Lead, in 1 cwt. kegs	per cwt.	8	12	3
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins	per gal.	3	6	6
Genuine Red Lead, Dry, 1 cwt. keg	per cwt.	5	18	3
Genuine Linseed Oil Putty, 1 cwt. keg	„	2	14	0
Size XD quality 28 lb.	per tin		9	0
Raw Linseed Oil (5 gal.) drums extra	per gal.		17	0
Boiled Linseed Oil (5 gal.) do.	„		17	6
SUNDRIES				
Turpentine substitute (5 gal.) drums extra	„		5	4½
do. do. (40 gal.) do. do.	„		4	8⅜
Solignum, Brown (5 gal. cans) Exterior	„		8	4
Creosote (40 gal. barrels)	„		2	3
Paste Powder (1 lb. packets)	per lb.		1	10
White Lining Paper	per piece		1	2½

VARNISHES, etc.

		£	s.	d.
Delivered London area				
Oak Varnish, Outside or Inside	per gal.	2	0	0
Oak Pale Copal do.	„	2	0	0
Hard Drying Oak for Inside	„	2	5	0
Crystal Paper Varnish do.	„	2	8	0
Eggshell Flat Varnish do.	„	2	6	0
Finest Carriage Varnish	„	2	7	0
Front Door Varnish	„	2	4	0
Japan Gold Size	„	1	18	0
Black Japan	„	1	16	0
Brunswick Black	„	1	12	0
Berlin Black	„	1	10	0
Terebene	„	1	17	0
Knotting (1 gal. bottles free)	„	1	15	0
French and Brush Polish (do.)	„	2	2	0

GLASS

	per ft. super s.	d.
Delivered London area		
18 oz. Sheet Glass Ordinary Glazing Quality-Cut Sizes		7⅞
24 oz. „ „ „ „ „ „		10⅜
26 oz. „ „ „ „ „ „	1	0½
32 oz. „ „ „ „ „ „	1	4½
⅛ in. Rolled Plate		11½
¼ in. Rolled and Rough Cast	1	3
¼ in. „ „ „ „	1	3½

	per ft. super s.	d.
⅛ in. Figured Rolled and Cathedral, Standard patterns: White Group 1		11½
do. Group 2	1	3½
do. Standard Tints	1	10
do. Special Tints	6	8
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating Group 3	1	4½
¼ in. Wired Cast	1	7½
¼ in. Georgian Wired Cast	1	7½

Hollow Glass Blocks—	Each		
B.P.2 5¾ × 5¾ × 3⅞ in.	3	3	
P.B.3 7¾ × 7¾ × 3⅞ in.	5	0	
P.B. 32 7¾ × 7¾ × 3⅞ in.	5	0	
Radiused Corner Blocks to match up with—			
P.B.2	6	0	
P.B.3	7	6	
P.B.32	7	6	

¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super s.	d.
In plates not exceeding 2 ft. sup.	4	3
„ „ „ 5 ft. sup.	5	3
„ „ „ 45 ft. sup.	6	3
„ „ „ 100 ft. sup.	6	9
¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality—Not exceeding 135 ft. sup. or 240 in. one way or 130 in. both ways	10	0
Not exceeding 180 ft. sup. or ditto	13	4

Plates exceeding 180 ft. sup. prices on application.
Substances other than ¼ in. Polished Plate at Special Prices

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. sup. s.	d.
18 oz. sheet O.Q.	3,000		5⅛
24 oz. „ „	2,000		7⅞
26 oz. „ „	2,000		9¼
32 oz. „ „	2,000	1	1½
⅛ in. Rolled Plate	1,000		9½
⅛ in. Figured Rolled and Cathedral Standard Patterns, White Group 1	1,000		9½
do. Group 2	1,000		11⅛
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte Group 3	1,000	1	0½
⅛ in. Rolled Plate or Rough Cast	2,000	1	0½
¼ in. „ „ „ „	2,000	1	1½
¼ in. Wired Cast, Hexagonal	2,000	1	3½
¼ in. Georgian Wired Cast	2,000	1	4

The Builder

CURRENT RATES OF WAGES

AS FROM MAY 27, 1957. (Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1
Craftsmen	4/6	4/5½
Labourers	3/11½	3/11

Town.	*Grade.*
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A1
Accrington	A
Addlestone	A
Afan Valley	A
Aldeburgh	A1
Aldershot District	A1
Alfreton UD	A
Alnwick UD	A
Altrincham	A
Amble	A
Ambleside	A1
Amersham	A
Ammanford	A
Andover	A
Anglesey, Isle of	A1
Ardingly	A1
Arundel	A1
Ascot	A1
Ashbourne RD	A1
Ashbourne UD	A1
Ashby-de-la-Zouch UD	A
Ashby Woulds UD	A
Ashford (Kent)	A1
Ashford (Middlesex)	A
Ashington UD	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A1
Atherstone RD	A
Attleborough	A1
Axminster	A1
Aylesbury	A1
Ayisham	A1
Bagshot	A1
Bakewell UD	A1
Banbury	A1
Bangor	A1
Barnard Castle UD	A
Barnoldswick UD	A
Barnsley CB	A
Barnstaple	A1
Barrow-in-Furness	A
Barrow-upon-Soar RD (part Thrussington)	A1
Barry	A
Basford RD (exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley MB	A
Baxterley	A1
Beaconsfield District	A
Bearl	A
Beccles	A1
Bedale RD	A
Bedford	A
Bedlington	A
Bedlingtonshire UD	A
Bedwas	A
Beeston & Stapleford UD	A
Belper UD	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick Borough	A
Beverley MB	A
Bewdley MB	A
Bexhill-on-Sea	A1
Bideford	A1
Biggleswade	A1
Billericay	A
Billing	A
Billingham UD	A
Bilsthorpe	A
Bilston MB	A
Birchington	A1
Birkenhead	*
Birmingham CB	†A
Bishop Auckland UD	A
Bishop's Stortford	A
Bishops Castle MB	A1
Bispham	A
Blackburn	A
Blackpool	A
Blackwell RD	A
Blandford	A1
Blaydon UD	A
Blidworth	A
Blyth B.	A
Bodmin	A1
Bognor Regis	A1
Boldon UD	A
Bolsover UD	A
Bolton	A
Boston MB	A
Bourne End	A
Bournemouth District	A
Brackley MB	A1
Bracknell	A1
Bradford CB	A
Bradford-on-Avon	A1
Braintree	A1
Brandon & Byshottles UD	A
Brecon—Borough of	A1
Breconshire, County of	‡A1
Brent Knoll	A1
Brentwood	A
Bridgend	A
Bridlington MB	A
Bridlington RD	A1
Bridgnorth MB	A1
Bridgnorth RD	A1
Bridgwater	A1
Brierfield	A
Brighouse MB	A
Brighton & Hove	A
Bristol District	A
Broadstairs	A1
Bromsgrove UD	A
Broughton, Flint	A
Buckfastleigh	A1
Buckingham	A1
Buckley	A
Bungay	A1
Burnham-on-Crouch	A1
Burnham-on-Sea	A1
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Caernarvon	A1
Caernarvonshire, Cnty. of	‡A1
Caider Valley	A
Camberley District	A1
Cambridge	A
Cannock UD	A
Canterbury	A1
Cardiff	A
Cardiganshire, County of	‡A1
Carlisle	A

CURRENT RATES OF WAGES—Continued

Town.	Grade.
Carlton UD	A
Carmarthen—Borough of	A1
Carmarthenshire,Cnty of ‡	A1
Carnforth	A
Castleford UD	A
Caterham	A
Chapel-en-le-Frith	A
Chard	A1
Charmy Down	A
Chatham District	A
Chatteris	A1
Cheadle (Staffs) RD	A
Chelmsford	A
Cheltenham	A
Chepstow	A
Chertsey	A
Chester	A
Chester-le-Street UD	A
Chesterfield MB	A
Chesterfield RD	A
Chichester	A1
Chipping Norton	A1
Chipping Sodbury	A1
Chippenham (inc. Chippenham Within and Hardenhuish)	A1
Chorley	A
Cirencester	A1
Clacton	A1
Clay Cross UD	A
Cleethorpes MB	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville UD	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett UD	A
Conway	A1
Corby UD	A
Cornwall, County of	‡A1
Corsham District	A
Coventry CB	A
Cranbrook	A1
Cranleigh	A1
Cranwell Aerodrome Site	A
Crawley	A1
Crewe	A
Crewkerne	A1
Cromer	A1
Crook and Willington UD	A
Crowborough	A1
Cuckfield	A1
Cwmbran	A
Dalton-in-Furness	A
Darlington CB	A
Dartmouth	A1
Darwen	A
Daventry MB	A1
Deal	A1
Denbigh Town	A1
Derby CB	A
Devizes	A1
Devon, County of	‡A1
Dewsbury CB	A
Didcot	A1
Diss	A1
Doncaster CB	A
Dorchester	A1
Dorking	A
Dorset, County of	A1
Dover	A1
Dovercourt	A
Driffield UD	A1
Drigg & Carleton	A
Droitwich MB	A
Dudley CB	A
Dunstable	A
Durham B	A
Eastbourne	A
E. Glam. & Mon. Val.	A
East Grinstead District	A1
East Kesteven RD	A1
East Retford MB	A
Eastwood (Notts) UD	A
Ebbw Vale & District	A
Edenbridge	A1
Ely	A1
Epping	A
Evesham MB	A1
Exeter	A
Exmouth	A1
Fakenham	A1
Falmouth	A1
Fareham	A
Faversham	A1
Felixstowe	A1
Filey UD	A
Fleetwood	A
Flint MB	A
Folkestone	A1
Frinton	A1
Frome	A1
Gainsborough UD	A
Gateshead CB	A
Gillingham (Dorset)	A1
Gillingham (Kent)	A
Glastonbury & Street	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of ‡	A1
Godalming	A1
Goole, MB	A
Goole RD (part—Airmyn, Hook)	A
Gosport	A
Grantham MB	A
Gravesend	A
Grays Thurrock UD Area	A
Great Yarmouth	A
Grimsby CB	A
Grimsby RD (part)	A1
Guildford District	A1
Halesowen MB	A
Halifax CB	A
Halstead	A1
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate MB	A
Hartlepool B	A
Harwell	A1
Harwich	A
Haslemere	A1
Hastings	A1
Hatfield (Herts)	A
Havant	A
Haywards Heath	A1
Heanor UD	A
Hemel Hempstead	A
Henley-on-Thames	A1
Hereford	A1
Herefordshire, Cnty. of ‡	A1
Herne Bay	A1
Hertford	A
Hexham RD	A
Hexham UD	A
Heysham	A
Heywood	A
Higham Ferrers MB	A
High Wycombe	A
Hinckley UD	A
Hitchin	A
Hoddesdon	A
Holywell	A
Horley	A1
Horncastle UD	A1
Horsham	A1
Horwich	A
Huddersfield CB	A
Hull	A
Hunstanton	A1
Huntington (Staffs)	A
Ilfracombe	A1
Ilkeston MB	A
Ilkley UD	A
Ipswich	A
Isle of Sheppey	A1
Isle of Thanet	A1
Isle of Wight	A1
Jarrow B	A
Keighley MB	A
Kendal	A
Kenilworth UD	A
Kettering MB	A
Keynsham	A
Kidderminster MB	A
Kingskerswell	A1
King's Lynn	A1
Kingsteignton	A1
Kirkham	A
Knaresborough UD	A
Knutsford	A
Lancaster	A
Leamington MB	A
Leatherhead	A
Leeds CB	A
Leek UD	A
Leicester CB	A
Leighton Buzzard	A1
Leiston	A1
Leominster	A1
Letchworth	A
Lewes	A1
Lichfield MB	A
Lincoln CB	A
Liskeard	A1
Littlehampton	A1
Liverpool	*
Llandudno	A1
Llanelly (incl. Llanelly RD)	A
Llanfairfechan	A1
Llangollen	A1
London	*
Long Eaton	A
Looe	A1
Loughborough MB	A
Louth MB	A1
Lowestoft	A
Loxton	A1
Ludlow MB	A1
Ludlow RD	A1
Luton	A
Lyme Regis	A1
Lyneham (Devon)	A1
Lytham	A
Macclesfield	A
Maidenhead	A
Maidstone	A
Maldon (Essex)	A1
Maltby UD	A
Malton UD	A1
Malvern UD	A
Manchester	A
Manningtree	A1
Mansfield MB	A
March	A1
Margate	A1
Market Harborough RD	A1
Market Harborough UD	A
Market Rasen UD	A1
Martock	A1
Maryport	A
Matlock UD	A
Melksham	A1
Melton Mowbray UD	A
Merionethshire	A1
Merthyr	A
Mexborough UD	A
Middlesbrough CB	A
Middleton	A
Middlewich	A
Mildenhall	A1
Milford Haven UD	A1
Minehead	A1
Monmouth—Borough of	A1
Monmouthshire	A1
Morecambe	A
Moreton Valence	A1
Morley	A
Morpeth B	A
Morpeth RD	A
Mundesley	A1
Nantwich	A
Neath & Valley	A
Nelson	A
Newark MB	A
Newbury	A1
Newcastle-on-Tyne CB	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A1
Newquay	A1
Newton Abbot	A1
Normanton UD	A
Northallerton District	A
Northallerton UD	A
Northampton CB	A
North Shields	A
North Walsham	A1
Northwich	A
Norton Radstock	A1
Norwich	A
Nottingham CB	A
Nuneaton MB	A
Oakham RD	A1
Oakham UD	A1
Okehampton	A1
Oldham	A
Ongar	A
Ormskirk	A
Ossett & Horbury	A
Oswestry	A1
Oundle UD	A1
Oxford	A
Oxted	A1
Padstow	A1
Paignton	A1
Par	A1
Pembrokeshire (except Milford Haven)	A1
Penmaenmawr	A1
Penrith UD	A1
Penzance	A1
Peterborough, Soke of (Eastern Regional portion)	A1
Petersfield	A1
Pickering	A1
Plymouth	A
Pontefract MB	A
Pontypool & District	A
Pontypridd District	A
Porthcawl	A
Portishead	A
Portland Bill	A1
Portsmouth	A
Port Talbot	A
Preston	A
Princetown	A1
Pudsey MB	A
Pulborough	A1
Radnorshire, County of	‡A1
Ramsgate	A1
Raunds UD	A
Rayleigh	A
Reading	A
Redcar B	A
Redditch UD	A
Redhill & Reigate	A
Rhondda Valley	A
Richmond B (Yorks)	A
Ripon MB	A1
Rochdale	A
Rochester	A
Ross-on-Wye	A1
Rossendale Valley	A
Rotherham CB	A
Royston	A1
Rugby MB	A
Rugeley UD	A1
Rushden UD	A
Saffron Walden	A1
St. Albans	A
St. Austell	A1
St. Helens	A
St. Neots	A1
Salisbury City	A1
Salisbury Plain	A1
Sandy	A1
Sawbridgeworth	A
Saxmundham	A1
Scarborough MB	A
Scunthorpe MB	A
Seaford & Newhaven	A1
Selby UD	A
Sevenoaks	A
Shaftesbury	A1
Sheerness	A1
Sheffield MB	A
Shepton Mallet	A1
Sherborne	A1
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury MB	A
Sirhowy Valleys	A
Sittingbourne	A1
Skegness UD	A1
Skipton UD	A
Sleaford UD	A1
Slough, Windsor & Eton District	A
Smethwick CB	†A
Snettisham	A1
Solihull UD	A
Somerset, County of	‡A1
Southampton and Eastleigh	A
Southend-on-Sea Dist.	A
Southport	A
South Shields CB	A
Southwold	A1
Spalding UD	A1
Stafford MB	A
Staines	A
Stamford MB	A
Stantonwick	A
Stevenage	A
Stockport	A
Stockton RD	A
Stockton-on-Tees B	A
Stoke-on-Trent CB	A
Stoke Orchard	A1
Stourbridge MB	A
Stourport UD	A
Stowmarket	A1
Stratford-on-Avon MB	A
Stroud (RD Area)	A1
Sunderland CB	A
Sunningdale	A1
Sutton Coldfield MB	A
Swadlincote UD	A
Swaffham	A1
Swanage District	A1
Swansea	A
Swindon District	A
Swinton UD	A
Tamworth MB	A
Taunton	A1
Tavistock	A1
Tenterden	A1
Teignmouth	A1
Tewkesbury	A1
Thames Haven	A
Thetford	A1
Thirsk RD	A
Thorpe Bay	A
Thurrock UDC Area	A
„ North of to Billericay	A
Tilbury	A
Todmorden MB	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Tring	A1
Trowbridge	A1
Truro	A1
Tunbridge Wells	A1
Tynemouth CB	A
Ulverston	A
Uppingham (Salop)	A1
Uttoxeter RD	A1
Uttoxeter UD	A1
Wakefield CB	A
Wakefield RD	A
Walsall CB	A
Wallsend B	A
Walsden	A1
Walton-on-Naze	A1
Ware	A
Warminster	A1
Warrington	A
Warwick MB	A
Wednesbury MB	A
Wellingborough UD	A
Wellington UD	A
Wellington (Somerset)	A1
Wells (Norfolk)	A1
Wells (Somerset)	A1
Welwyn	A
Welwyn Gar. City	A
West Bromwich CB	A
Westbury	A1
Westcliff-on-Sea	A
Westerham	A1
West Hartlepool CB	A
Westmorland (except Kendal)	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth (including Portland Bill, excluding Portland Stoneyards)	A1
Whitby UD	A1
Whitby RD	A1
Whitehaven	A
Whitley & Monkseaton UD	A
Whitstable and District	A1
Wickford	A
Widnes	A
Wigan	A
Wigton	A1
Wilmslow	A
Wilts. County of	‡A1
Wimborne	A1
Wincanton	A1
Winchester	A1
Windermere	A1
Wisbech	A1
Witham	A1
Withernsea UD	A1
Woking	A1
Wokingham	A1
Wolverhampton CB	A
Wolverton District	A1
Woodbridge	A1
Woodhall Spa UD	A1
Woodstock	A1
Worcester CB	A
Workington	A
Worksop MB	A
Worthing	A1
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A1
Yate	A1
Yeovil Borough	A1
York CB	A
Ystalyfera	A

*For Birkenhead, Liverpool and London the rates are:—Craftsmen, 4s. 7½d.; Labourers, 4s. 1d. In the case of London the rate beyond the 12-mile radius is: Craftsmen, 4s. 7½d.; Labourers, 4s. 0½d. †Plus 2d. per working day. ‡This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 3s. 7½d. per hour. Women engaged on work other than craft processes, 3s. 3½d. per hour.

For Building Trade Wages in Scotland see page 1073

The Builder Review of PLANT & MATERIALS

Domestic Insulation

'ROCKSIL HOUSEWARM' attic insulation is marketed by Cape Building Products, Ltd., Cowley Bridge Works, Uxbridge, Middlesex. It is a white, fleecy, resilient rock wool material, and is recommended for insulating attic water tanks and pipes as well as laying between the joists.

HIGH LIFT ATTACHMENT.—*Whitlock Bros., Ltd., of Great Yeldham, Essex, have added a high lift attachment to their 'Dozaloda' forward shovel enabling it to load into high hoppers and onto scaffolding. With this attachment a load of* 1,000 *lbs. can be lifted to a height of* 16 *ft.* 6 *ins., or* 12 *ft. under the lip of the bucket in the tipped position*

Spraying Machine

Volspray, Ltd., Grosvenor-gardens House, London, SW1, have recently introduced the 'Bridgewater' spraying machine, to apply in spray form dense liquids and semi-solid fluids. The principle of operation depends on a rotary brush of special construction which collects the material. The bristles strike a plate, flicking the liquid in a controllable spray onto the article passing under the machine on a conveyor belt. The amount of fluid applied can be controlled to fine limits and machines for spraying, or granulating and spraying in one operation can be supplied and any standard conveyor is suitable, if it is not wider than the machine.

A Module Lighting System

A new flexible lighting system, which can be used either to provide overall illumination or to highlight particular points, is now being produced by Lumenated Ceilings, Ltd., Alliance House, Caxton-street, London, SW1. Known as the Lumenator Module system, it consists of a false ceiling of translucent plastics panels supported in an aluminium framework suspended below the lamp arrangement. The layout is based on a two-foot square module. The translucent panels diffuse the light evenly without glare, high spots or shadows, and they are claimed to look attractive even when the lights are switched off. Two standard types are available—one, moulded from vinyl plastics, has a decorative face in one or two patterns, and the other, moulded from acrylic plastics, is completely plain.

TRADE NEWS

Mechanical Handling Plant Agency

DEMAG-BAGGERFABRIK G.m.b.H., of Dusseldorf, Germany, who claim to be the largest mechanical handling and material moving equipment manufacturers in Europe, have appointed Wood, Pritchett and Partners, Ltd., Mechquip House, Goldhawk-road, London, W12, as their sole selling agents and distributors for the United Kingdom. The London firm's managing director, Mr. A. G. H. Pritchett, informs us that the factories in Germany are about to produce new excavator models incorporating hydraulic and air systems. The standard range of machines will be from ½ to 9 cu. yd. capacity. The range of cranes (mobile, truck and rail) are from 5 to 60 tons (BSS 1757) capacity and will incorporate the air control features of the excavators.

Asphalt Companies to Merge

At meetings held on November 6, 1957, resolutions were duly passed authorising the directors of the Neuchatel Asphalte Company, Ltd., and Ragusa, Ltd., to carry into effect the merger proposals of those Companies and Highways Construction, Ltd., in accordance with the announcement previously made.

Distribution Committee

Two years ago Wolf Electric Tools, Ltd., Pioneer Works, Hanger-lane, London, W5, in collaboration with their main stockists, formed a distribution committee. This committee has recently held another successful meeting at the company's head office.

The committee, under the chairmanship of Mr. R. F. Hatto, sales director, is composed of executives from the company's Sales, Publicity and Service Departments, and 12 representatives from leading Wolf stockists throughout the country who are elected to serve for a period of one year. All matters concerning sales promotion and distribution of Wolf products come within the scope of the committee and include such diverse subjects as sales policy interpretation, discount structure, release dates for new lines, carriage paid rates, carton design and packaging methods. A few weeks before the committee meets a general letter is sent to Wolf stockists inviting them to submit matters for consideration, and the number of really helpful suggestions received provides a good indication of the lively interest felt in this combined endeavour by the trade as a whole.

LIGHTING SHOWROOM REDESIGNED.—*The showrooms of Troughton & Young (Lighting), Ltd., The Lighting Centre,* 143, *Knightsbridge, SW*1, *have been completely redesigned by Hulme Chadwick, ARCA, FSIA, ARAeS. The ceiling is of particular interest in that it attempts to combat the difficult problem of showing a large number of lighting fittings without appearing overcrowded*

CONSTRUCTION IN CHINA

Trade Mission Impressed With British Techniques

By a Special Representative

THE five-member Chinese Construction Mission, which left Britain this week after spending a month studying technical developments in the British construction industry, made a large number of visits during their stay to industrial sites and buildings, to technical institutes and research laboratories, to firms making building plant and machinery as well as to the new towns of Harlow and Crawley. They also spent a great deal of time at the Building Exhibition to which they had been specially invited by the organisers. An interesting feature in the programme of the Mission was a detailed technical discussion with a panel of British experts brought together by the British Council for the Promotion of International Trade at which problems facing both British and Chinese technicians in pre-stressed concrete systems, quick-set concrete admixtures, timber-shell roofing and use of bituminous materials, were discussed.

Similar Problems

In this discussion both sides found that despite wide differences in conditions the level of technical problems was similar. The imparting of information was by no means one-sided and the British experts expressed their appreciation of the outstanding technical ability of the Chinese visitors.

In an interview with a representative of *The Builder*, three members of the Mission —Mrs. Hu Ming, Vice-Director of the Bureau of Building Mechanisation, Mr. Wu Shih-he, chief engineer, and Mr. H. Kwang, engineer, all of the Ministry of Construction in Peking—explained that the purpose of the Mission had been to study British experience in construction—with special emphasis on pre-stressed re-inforced concrete systems—in order to see how such experience could help China in her task of building sufficient industrial capacity to enable her to become a major industrial power in the course of the next 10 years or so. The Mission had been very impressed by what they had seen here and stated that whilst they had received much help from the Soviet Union and other Eastern European countries, they paid great attention to the experience and success in construction methods in other countries, including Britain. The programme of building in China in the next Five Year Plan was not yet fixed, but it was known that it would be greater than in the First Five Year Plan when between 1953 and mid-1957 buildings covering an area of 200 million square metres had been constructed. About half this figure was in respect of industrial buildings, and the rest was housing, schools, offices and other types of buildings.

Whilst there were many differences between British and Chinese methods the Mission considered that the main trend in construction in both countries was essentially the same. Both were striving for more mechanisation, more pre-fabrication and were seeking more effective methods of building using as light a construction as possible. So far as concrete mixing was concerned the methods used were very similar. The differences arose mainly from varying availability of materials and from the fact that China could afford a greater supply of labour on sites. Britain, on the other hand, could afford to use more steel in construction than could China. For example, it was the practice in China to use re-inforced or pre-stressed concrete for roof trusses up to 24 metres and sometimes up to 30 metres, whereas in Britain, the Mission had noted, steel was used for roof trusses as small as 12 metres.

Economy in Steel

There were also differences in the methods used in pre-stressing concrete where the emphasis in China was on methods which were economical in the use of steel. Again, to save steel, China made greater use of bricks for constructing bearing walls in buildings of six and even eight storeys, whilst Britain used more re-inforced concrete. Scaffolding methods were very different, with China relying on bamboo.

On the question of mechanisation on sites the Mission pointed out that they were using large cranes for lifting pre-fabricated units, machines capable of hoisting 10 to 20 tons, but for smaller loads it was still more economical to use hand-operated winches because of the very adequate supply of labour. For this reason there was not as yet a great deal of light handling machinery in use. However, in the moving of pre-fabricated units the percentage handled mechanically had risen from 74 per cent. in 1955 to 84 per cent. in 1956.

Asked what were the main problems facing the construction industry, the Mission said that at the present time economy in materials was a first consideration. Steel, cement and timber had to be saved, in that order of priority.

Purchase Negotiations in Hand

It was intended, said the members of the Mission, to start negotiations very soon for the purchase of some machinery for the processing and making of building materials. At the outset the amounts purchased would be small because Chinese technicians were anxious to get a clearer idea of how such machinery could be used to advantage in their country and to learn from experience how the machinery would stand up to conditions which were very different from those in Britain. They were also interested in machinery for mechanical handling of materials on building sites, but this type of machinery would be the subject of further study on their return to China as the Mission had not had sufficient time to make a detailed study of what would be suitable. They had, however, been impressed by the mobility and ease of handling of much of the machinery they had seen, and it was their intention to give further attention to this, but at a later date. China was already making her own special winches for vertical transportation on sites and had devised many forms of suspended wire winches. They also made light derricks for hoisting weights up to half a ton and roof derricks capable of lifting weights up to 1½ tons. They had, however, found many merits in British machinery which might be adapted for use in China.

The Mission expressed their interest in the work being done in the research laboratories of the large contractors and at the Building Research Station at Watford. Of particular interest was the electrical equipment in use for testing building materials.

The Mission left Britain with a very wide and favourable impression of technical development here and were full of praise for the planning ideas incorporated in the new towns which they visited. Of particular interest also was the wide variety in flooring materials, paints, piping, acoustic techniques and in the use of waste products to make building materials.

On their return to China the Mission will make a full report to the Minister of Construction on the technical qualities of British plant and equipment and this will, no doubt, be considered in the 1958 buying programme of the foreign trade section in the Second Five Year Plan.

NEWS IN BRIEF

Employment in Building

THE number employed in building and contracting decreased by 5,000 during October, the figure at the end of that month being 1,506,000, according to Ministry of Labour and National Service statistics. The corresponding figure for the end of October, 1956, was 1,544,000.

Officers Elected

At the annual meeting of the Truck and Ladder Manufacturers' Association, the following officers were elected for the ensuing year: T. W. Lane, president; R. G. Milles and L. A. Frankel, vice-presidents; C. H. Matthews, immediate past-president; members of council, A. C. Drew, P. W. Gamble, G. Neild, J. H. Smith, R. F. Hide, R. Moat; honorary members, G. A. Cayless and P. Crowson.

Rating of Plant and Machinery

Mr. Henry Brooke, Minister of Housing and Local Government, has appointed a committee to prepare a new list of all the types of plant and machinery which are rateable. This information was given in an answer to a question in the House of Commons on December 6. The chairman is Sir Edward H. Ritson, KBE, CB. Included in the review are certain named items 'in the nature of building or structure.' The committee is inviting evidence from professional institutions and representative industrial associations. Any other body or person wishing to offer their views should communicate in writing with the Secretary, Mr. N. Hamilton, of the Ministry of Housing and Local Government.

Progress in Technical Education

Spectacular developments in technical education were indicated by Sir Edward Boyle, Parliamentary Secretary to the Ministry of Education. Speaking on December 6 at the opening of Billingham ICI Apprentices' School, Billingham, Co. Durham, he said: 'We have completed 443 building projects since the war, at a cost of £34,000,000, for the provision of new colleges and the improvement of old ones. We have £20,000,000 worth of projects at present under construction. And we have authorised £60,000,000 worth of new work, representing 320 building projects, to be put in hand by the spring of 1960. As for the students, there has been a steady growth in part-time day release by some 30,000 a year, so that the number of these students now exceeds 400,000.'

OVERSEAS BUILDING

From Our Own Correspondents

HONG KONG.—Scott and Wilson, Kirkpatrick and Partners, consulting engineers, of London, are to investigate and report on reclamation at Gin Drinkers Bay, Taipo, and other sites around the Colony coastline. Where feasible they will prepare schemes for the work involved, including drainage and ancillary works. They are also to prepare a detailed survey and necessary plans for a new road to link Tsun Wan and Taipo. . . . Director of Public Works, the Hon. A. Inglis, has said that tenders for the construction of the Sisters' and Nurses' Quarters—the first stage of the new 2,000-bed Kowloon General Hospital—will be called for early next March. . . . The Mong Kok branch of the Hong Kong and Shanghai Bank in Argyle-street, Kowloon, is to be extended at a cost of almost $1m. The extension will be a five-storey air-conditioned building with an enlarged banking hall on the ground floor. Architects are Palmer and Turner (G. D. Smart, FRIBA). Alongside this extension, a 10-storey office and apartment building is being designed for the Tak Shing Investment Co. by Mr. Wong Cho-tong, authorised architect, at a cost of $400,000. . . . A 10-storey residential building, estimated to cost $650,000, is being designed by M. A. Xavier, authorised architect, for a site at 95, Wongneichong-road, Wanchai. It will take 18 months to complete. . . . The School of Architecture at the University of Hong Kong is developing a new town on reclaimed land at Taipo in the New Territories, to take 65,000 people. The preliminary plans have caused some interest in Government circles. The town is designed with its own industries.

MALAYA.—Plans for a new port to cost 30m. Malayan dollars, in mangrove swamps in Selangor State, near Port Swettenham, have been announced by Mr. H. J. Shailes, Chief Port Manager. The initial scheme will provide three deep sea wharves 580 ft. long, with space for eight or ten ocean berths. Roads and railways will run into the port, and work is expected to start in April, 1958.

CONTRACTS OPEN

***India.**—Tenders invited for the supply of eight self-supporting towers (200 ft.) and four self-supporting towers (80 ft.). Bids should be sent to the Director-General of Supplies and Disposals, Shahjahan-rd., New Delhi, by December 27. A copy of the tender documents, including specifications and drawings, is available for loan to UK firms in order of receipt of applications. Ref. ESB/29156/57. (Tel.: Chancery 4411, ext. 738 or 771.)

Iraq.—The Eastern Bank, Crosby-sq., EC3, inform us that their Bagdad branch has received details of a Government of Iraq contract for the delivery, erection and supervision of operation of cabling (up to 33 KV), lighting and accessories for Basrah power project. Tender documents seen until January 13 at office of consulting engineers, Ewbank & Partners, 10-11, Grosvenor-pl., London, SW1, from whom copies may be had on payment of equivalent of 25 Iraqi dinars. Tenders to Basrah (Development Board and Min. of Development) by March 3.

* From the Board of Trade Special Register Information Service. The telephone number and extension at the end of the paragraphs relate to the department of the Export Service Branch, Lacon House, Theobalds-road, WC1, where further information can be obtained.

NEW SEAPORT FOR ROTTERDAM

Hopes of Completion by 1960

EXPECTED to play an important part in the future European Economic Community, a new seaport to be called Euro Gate is being planned for the tip of the island of Rozenburg on the south of the estuary of the New Waterway, which connects Rotterdam to the sea, opposite Hook of Holland. This was recently announced by the Burgomaster of Rotterdam.

Comprising a number of large port projects, the seaport is regarded as an extension of the Rotterdam port area, notably as an addition to the three petroleum harbours on the south bank of the New Waterway, which are now Rotterdam's nearest ports to the sea.

The site available for the projects covers an area of 1,550 hectares (3,875 acres), and the entire seaport is expected to be 4 km (2.5 miles) long and 13½ m (44 ft.) deep and accessible to 65,000 d.w. ton and larger vessels. A 930-hectare (2,325-acre) area has been allocated for the construction of factory sites.

Various companies have already shown their interest in the project, including the Royal Dutch/Shell Group, which has applied for the option on a 100-hectare (250-acre) site at the port for the construction of berths to take large tankers. A number of Netherlands shipyard owners who propose forming a combine for the construction of a new shipyard, have also shown their interest, as well as an American company.

The building costs for the system of projects are estimated at fls. 135m, while it is estimated that a further fls. 35m will be required for ancillary projects such as railways, motor roads, the connection for inland navigation, etc. If the projects are carried out according to plan, the seaport will be completed by 1960.

A Builder Publication

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The SCOTTISH BUILDER

Scotland's Housing, October

THE number of new houses completed in Scotland in October was 2,841, bringing the total completed this year to 25,851 compared with 24,962 at the same date last year. This is shown in the monthly return of the Department of Health for Scotland and the Ministry of Housing and Local Government published by HMSO, price 3d.

New houses under construction at the end of October totalled 37,271; there were 38,357 under construction at the same time a year ago. Of the 314,994 houses built in Scotland since the war, 282,143 were built by local authorities, 1,295 by housing associations, 6,883 by government departments, and 24,673 by private builders.

NEW BUILDINGS

Armadale.—Tenders invited for several works in connection with construction of 64 houses at East Main-st. (South Side) and four houses at West Main-st. (Gap Side). Applications to H. H. K. Clarkson, Town Clerk, 4, South-st.

Cumbernauld Development Corporation.—Part 1 (Housing) Development (First Phase). Tenders invited for all ancillary works (including building work and attendance upon main contractor) for erection of 39 prefabricated single-storey timber houses. Applications to Chief Architect and Planning Officer, Cumbernauld Development Corporation, Cumbernauld House, Cumbernauld, by Glasgow.

Dumfries CC.—Carlisle-Glasgow Trunk Road (A 74). Improvement between Johnstone Bridge and Upper Murthat. Tenders invited for above works extending for 5½ miles and including construction of dual carriageways, extension of bridges and drainage works. Applications to L. T. Carnegie, County Clerk, County Buildings. Dep. 10 gns.

Scottish Home Department.—London-Edinburgh-Thurso Trunk Road (A 9). Tenders invited for new bridge and approaches over River Avon at Linlithgow. Applications to F. A. Macdonald & Partners, 11, Woodside-terr., Glasgow, C3. Dep. £15.

West Lothian CC.—Seafield Drainage. Tenders invited for construction of r.c. sewers, sewage purification works, pump house, access road, piping and ancillary works at Seafield. Cast iron pipes comprise 515 yd. 12 in. dia., 58 yd. 10 in. dia., 330 yd. 9 in. dia., with brick and r.c. manholes. Applications to Messrs. Babtie, Shaw & Morton, 17, Blythswood-sq., Glasgow, C2.

SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from May 27, 1957. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen 4s. 6d.; Labourers 3s. 11½d.

For apprentices, the rates are:

Year.	*Percentage of Craftsman's rate.*	*For week of 44 hours.* s. d.
1st	25	49 6
2nd	33⅓	66 0
3rd	50	99 0
4th	66⅔	132 0
5th	75	148 6

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	11½
Operatives on labouring operations (at end of probationary period)	3	5½

The Builder

FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

DECEMBER 16.

***†Buckinghamshire Water Bd.**—New offices, Aylesbury. R. C. White (F), 4, Temple-sq., Aylesbury. Dep. £5. Tenders by January 24.

***†Essex CC.**—Stage 2 extensions at Dagenham Kingswood sec. sch. County A. Est. cost £43,000.

DECEMBER 19.

***†Newcastle Regional Hospital Board.**—Extensions to Casualty dept. at Sunderland Orthopaedic and Accident Hospital. Secretary to the Board, Benfield-rd., Newcastle-on-Tyne, 6.

DECEMBER 21.

***†Beds. EC.**—Erection of (Kingsbrook) CP Infants' Sch., Bedford. County A.

DECEMBER 23.

***†Northampton CB.**—29 dwellings at Nelson-st. Boro' A. Dep. £2 2s. Tenders by Jan. 20.

***†Northants Standing Joint Committee.**—Two pairs of police houses at Towcester. County A.

DECEMBER 24.

***†Bury CB.**—Erection of Grammar/Technical Sch. Bradshaw, Gass & Hope, architects, 19, Silverwell-st., Bolton. Dep. £5 5s. Tenders by February 11.

***†Leeds Regional Hospital Board.**—Alterations and extensions at Bootham Park Hospital, York. Architect to the Board, Park-parade, Harrogate. Dep. £2 2s. Tenders by January 20.

DECEMBER 27.

***†Durham CC.**—Two pairs of police houses, Wynyard-rd., West Hartlepool. County A.

DECEMBER 30.

***Merthyr Tydfil CB.**—Public convenience at Calon Uchaf. BE. Dep. £2 2s.

***Salford City C.**—Two classrooms and a physiotherapy block at Claremont Open-Air sch., Park-la. City E&S. Dep. £1 1s.

DECEMBER 31.

***†Hants CC.**—Erection of: Basingstoke Technical College (phase 1); Havant county grammar school; Eastleigh Technical College. C, The Castle, Winchester.

***†Hogsmill Valley Joint Sewerage Board.**—One pair of houses at Lower Marsh-la., Kingston-on-Thames. Clerk to the Board, Guildhall, Kingston-on-Thames. Dep. £2 2s.

***Luton RDC.**—Underfelting to roofs of 164 pre-war houses E&S., 48, Bute-st. Dep. £2 2s.

***†Middlesbrough CB.**—Erection of High Schools for Boys and Girls. Director of Education, Education Offices, Woodlands-rd. Dep. £5 5s. Tenders by Feb. 14.

***Sittingbourne and Milton UDC.**—Stripping and re-slating of swimming baths roof. E&S. Dep. £3 3s.

***†West Sussex CC.**—Alterations, additions and improvements at Midhurst Grammar Sch. (Job No. 4816). County A.

***†West Sussex CC.**—Fixed price tender for extension of Horsham Greenways Prim. Sch. (Job No. 5054). County A.

JANUARY 1.

***Bath City C.**—Alterations, repairs and improvements at 6, Oxford-row. J. F. Bevan, ARICS, The Guildhall, Bath. Dep. £2 2s.

JANUARY 6.

***Heston and Isleworth BC.**—Additional office accommodation, Health Centre, Bath-rd., Hounslow. B E & S, 88, Lampton-rd., Hounslow.

***Worthing RDC.**—Six flats at The Broadway site, Brighton-rd., Lancing. E&S, 15, Mill-rd. Dep. £2 2s.

JANUARY 15.

***Cardiff City C.**—Fixed price tenders for school clinic at Newborough-rd., Llanishen. City A. Dep. £2 2s.

***Kidderminster RDC.**—Public conveniences at Arley Village. E&S. Dep. £2 2s.

JANUARY 17.

***Sunderland CB.**—Alterations and extensions to cleansing depot, Railway-row. Boro' A., Grange House, Stockton-rd. Dep. £2 2s.

JANUARY 20.

***Gillingham BC.**—76 dwellings at Twydall estate, Gillingham. BE. Dep. £5 5s.

***Reading CB.**—Fixed price tender for erection of clinic and dental unit off School-rd., Tilehurst. Boro' A. Dep. £2 2s.

***Salford City C.**—Classroom, store and covered way at North Salford Sec. Mod. Sch. for Girls. City E&S. Dep. £1 1s.

JANUARY 21.

***Hitchin UDC.**—Fixed price tender for 36 flats at Westmill estate. S., Dep. £3 3s.

JANUARY 28.

***Croydon CB.**—Classroom extension at Shirley Sec. Sch., Shirley Church-rd., (a) subject to fluctuations in wages and materials and (b) on fixed price basis. Chief Ed. Officer, Katharine-st. Dep. £1.

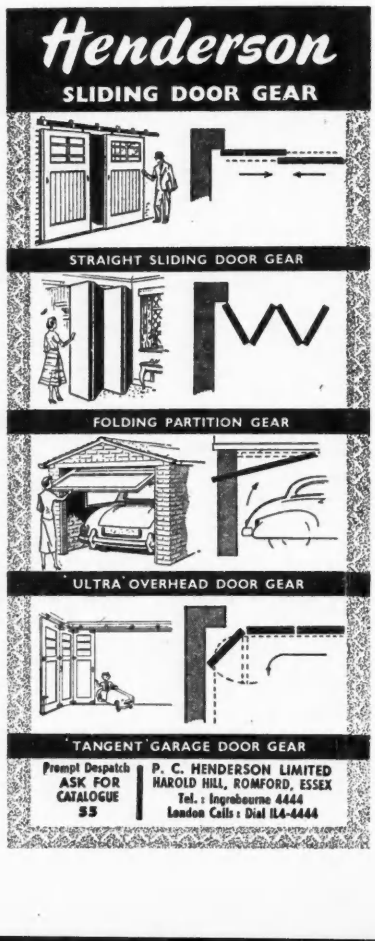
FEBRUARY 4.

***Lindsey (Lincs) CC.**—Erection of Grammar Technical Sch., Scunthorpe. County A., County Offices, Lincoln. Dep. £5 5s.

NO DATE.

***Herts. CC.** — Applications invited for inclusion on approved list for maintenance works, heating and electrical works, fencing works, etc. C.

***York (A) and Tadcaster Hospital Management Committee.**—Applications invited to be put on approved list for works of maintenance. F. A. Milnes, Group Secretary, Bootham Park, York.



PAINTING, MATERIALS, ETC.

DECEMBER 28

Monmouthshire CC.—Road materials. County E&S.

DECEMBER 31.

Esher UDC.—Road materials. E&S.

***Romford BC.**—Supply and installation of electrical equipment at Squirrels Heath Sch., Salisbury-rd. S. Dep. £2 2s.

Wiltshire CC.—Road materials. County S.

JANUARY 1.

***†Leeds Regional Hospital Board.**—Extension of steam main and installation of condense main at Storthes Hall Hospital, Kirkburton nr. Huddersfield. Architect to the Board, Park-parade, Harrogate. Dep. £2 2s.

JANUARY 3.

Wanstead and Woodford BC.—Road materials. Boro' E&S.

JANUARY 4.

Basildon UDC.—Road materials. E&S.

Hornchurch UDC.—Road materials. E&S.

JANUARY 6.

Banstead UDC.—Road materials. E&S.

Finsbury MBC.—Road materials. Boro'E.

Ilford BC.—Road materials. Boro' E&S.

JANUARY 8.

Harrow BC.—Road materials. Boro' E.

JANUARY 11.

Worcestershire CC.—Road materials. County S.

JANUARY 13.

Chigwell UDC.—Road materials. E&S.

Northamptonshire CC.—Road materials. County S.

JANUARY 20.

Ealing BC.—Building and road materials and road works. Boro' S.

JANUARY 21.

Radcliffe BC.—Road materials. Boro' E&S.

JANUARY 31.

Camborne-Redruth UDC.—Building and road materials. C.

Malden and Coombe BC.—Road materials. Boro' E&S.

MUNICIPAL AND CIVIL ENGINEERING WORKS, ETC.

DECEMBER 20.

†Crawley DC.—Extension of sewage treatment works. Ch. E.

DECEMBER 28.

Chesterton RDC.—4,950 lin. yd. of 3 in., 4 in. and 6 in. dia. asbestos-cement water mains at Fen Drayton. E. Dep. £2 2s.

DECEMBER 30.

Blaenavon UDC.—2,200 yd. of 7 in. dia. and 1,300 yd. of 5 in. dia. C.I. pipes and pumping station, Blaenavon supplementary water supply scheme. Thomas Morgan & Ptnrs., consts. engrs., 23, Gelliwastad-rd., Pontypridd. Dep. £3 3s.

Shrewsbury BC.—Road works at Bank Farm estate, Sentinel estate, Whitchurch-rd. and Coniston-rd. Boro' S. Dep. £2 2s.

Tees Valley Water Bd.—133 yd. of 30 in. dia. concrete-lined Class 'C' C.I. pipes and specials with run lead joints, and 7,913 yd. of bitumen-lined and sheathed steel pipes and specials from site of proposed Hemlington reservoir to connect with existing 30 in. main nr. Brambles Farm, Cargo Fleet, Middlesbrough. (Fixed price tender.) E&Gen. Mgr. Dep. £3 3s.

JANUARY 1.

Birmingham City C.—1,400 lin. yd. of stoneware and concrete pipe foul and S.W. sewers, 45 in. to 9 in. dia., etc., at Forman's-rd. and Stratford-rd., Sparkhill. City E&S. Dep. £2 2s.

***†Leeds Regional Hospital Board.**—Mechanical engineering services at St. John's Hospital, Keighley. Secretary to the Board, Park-parade, Harrogate. Dep. £2 2s.

Huntingdonshire CC.—Construction of dual carriageway from point south of Buckden railway bridge northwards to Ellington Brook (2½ miles) on London-Edinburgh trunk road, A.1. County S. Dep. £15.

Orpington UDC.—Making up of three streets, 1,362 lin. yd. of 6 in. to 15 in. dia. S.W. sewers in ogee concrete pipes, manholes, etc. E&S. Dep. £2.

Witney RDC.—12 miles of 3 in. to 10 in. dia. asbestos-cement pipes, C.I. fittings, valves, etc. for water supply of Standlake. Howard Hum-

phreys & Sons, Ccl's. constg. engrs., Victoria Station-hse., Victoria-st., SW1. Dep. £3 3s.

JANUARY 3.

Cirencester RDC.—811 lin. yd. of 5 in. and 7 in. dia. spun-iron rising mains, 5,546 lin. yd. of 6 in. and 9 in. dia. glazed stoneware pipe sewers, 966 yd. of 9 in. dia. concrete pipe sewers, 77 lin. yd. of 9 in. spun-iron pipe sewers, with manholes, two sewage pumping stations and sewage disposal works, etc., at Fairford. A. H. S. Waters & Ptnrs., engrs., 25 Temple-row, Birmingham, 2. Dep. £5 5s.

Upton-upon-Severn RDC.—8,360 lin. yd. of 6 in. and 3 in. dia. abestos-cement water mains. A. H. S. Waters & Ptnrs., engrs., 25, Temple-row, Birmingham, 2. Dep. £5 5s.

JANUARY 4.

Dunmow RDC.—Sewerage and sewage disposal works at Duck-st. and Great Easton. J. D. & D. M. Watson, MMICE, Ccl's. constg. engrs., 18, Queen Anne's-gate, SW1. Dep. £10 10s.

Lutterworth RDC.—12 miles of stoneware, concrete and C.I. sewers, 6 in. to 15 in. dia., drain connections, sewage disposal works and two pumping stations in parishes of Broughton Astley, Dunton Bassett, Leire, Ashby Magna and Ashby Parva. Pick, Everard, Keay & Gimson, Ccl's. constg. engrs., 6, Millstone-la., Leicester. Dep. £5 5s.

JANUARY 6.

Basildon DC.—7,500 sq. yd. of 8 in. r.c. carriageway, surface water sewers, etc.—Road No. 10. Ch. E. Dep. £5 5s.

†Biggleswade RDC.—5½ miles of 6 in. to 9 in. dia. stoneware sewers, 1½ miles 5 in. to 8 in. dia. asbestos-cement rising mains, three pumping stations, six sludge digestion tanks, etc., at existing sewage disposal works. Binnie, Deacon & Gomley, engrs., Artillery-hse., Artillery-row, SW1. Dep. £10. Tenders by February 3.

Brecknock RDC.—4,400 yd. of 10 in. dia. concrete-lined CI water main, booster station, etc. Water E. Dep. £2 2s.

Chapel-en-le-Frith RDC.—Cock yard sewerage: 4,800 yd. of 4 in., 6 in. and 9 in. spun-iron, concrete and stoneware pipe sewers in parish of Chapel-en-le-Frith and Whaley Bridge UDC. Brady & Partington, Ccl.'s engrs., Market-st., Chapel-en-le-Frith. Dep. £5.

Farnham UDC.—2,900 lin. yd. of 12 in. dia. spun-iron pumping main and alterations to pumping station at Waverley-rd., etc. John Taylor & Sons, constg. engrs., Artillery-hse., Artillery-row, Victoria-st., SW1. Dep. £5.

Middlesex CC.—Widening of bridge carrying Watford Way at Bunns-la., Hendon, over London Transport railway. County E. Dep. £10.

Salisbury and Wilton RDC.—¾ mile of 7 in. and 6 in. dia. sewers in concrete, stoneware and spun-iron pipes, with precast concrete manholes, laterals, pumping station, sewage treatment works, etc., at Berwick St. James, nr. Salisbury. Lemon & Blizard, constg. engrs., Lansdowne-hse., Castle-la., Southampton. Dep. £3 3s.

JANUARY 7.

Doncaster CBC.—2,000 yd. of 15 in. and 12 in. dia. spun-iron trunk water main from Waterdale to Great North-rd./Sprotborough-rd. junction. Water E. Dep. £3 3s.

Staffordshire CC.—Improvement of section of Cannock-Wolverhampton road, A460. C. Dep. £5.

JANUARY 9.

Wareham and Purbeck RDC.—Five miles of 12 in., 9 in. and 6 in. dia. concrete and stoneware sewers, 4 in. stoneware laterals as required, ½ mile of 4 in. spun-iron and asbestos-cement rising mains, sewage treatment works and three small ejector stations, etc., at Upton in parish of Lytchett Minster, Dorset. E&S. Dep. £10.

JANUARY 15.

Gipping RDC.—Six miles of 9 in. and 8 in. dia. spun-iron water mains and 15¼ miles of 7 in. to 3 in. dia. asbestos-cement mains, etc. Lemon & Blizard, Ccl.'s engrs., 59, Tufton-st., SW1. Dep. £5 5s.

JANUARY 16.

Lincolnshire River Bd.—R.C. wave wall, 4½ miles long, on south bank of Humber Estuary from Grimsby to Immingham. C. Dep. £5.

JANUARY 20.

Dumfries CC.—Improvement of 5¼ miles of Carlisle-Glasgow trunk road, A74, between Johnstonebridge and Upper Murthat. County C. Dep. £10 10s.

Warrington RDC.—Two sewage pumping stations, 2,000 lin. yd. of 15 in. to 24 in. dia. C.I. pumping main, 25,000 lin. yd. of 7 in. to 36 in. dia. stoneware, C.I. and concrete sewer, manholes, house connections, etc. John Taylor & Sons, engrs., Artillery-hse., Artillery-row, Victoria-st., SW1. Dep. £5.

Wing RDC.—833 yd. of 9 in. sewers, 733 yd. of 6 in. sewers and gravitational sewage disposal works at Great Breakhill, Bucks. S. Dep. £2 2s.

JANUARY 21.

Oswestry RDC.—Weston Rhyn and Chirk joint sewerage and sewage disposal, comprising laying of sewers, building of sewage purification works at Chirk. J. D. & D. M. Watson, MMICE, Ccl's. constg. engrs., 18, Queen Anne's-gate, SW1 Dep. £10 10s.

JANUARY 27.

Newton-le-Willows UDC.—5,000 lin. yd. of stoneware, spun-iron, steel and concrete sewer, 7 in. to 30 in. dia., manholes, etc. E&S.

JANUARY 29.

Northampton RDC.—850 yd. of 6 in. sewer, manholes, small sewage disposal plant, etc., in parish of Courteenhall. S. Dep. £3 3s.

GENERAL BUILDING WORK

(LONDON)

Camberwell.—FLATS.—Plans being prepared for a block of flats 30 storeys high for erection at Dawson's Hill, Overhill-rd., East Dulwich, for which planning permission is to be sought. Site explorations and surveys have been carried out, but it is understood that the owners of the land, the Tilt Estate Co., of Peckham Rye, are opposed to the scheme. The Boro' Architect is F. O. Hayes (A).

Merton and Morden.—GIRLS' SCHOOL.—The North-Eastern Divisional Education Executive has informed Surrey Education Com. that it approves the proposal to build a Roman Catholic secondary school for girls (450 places) on a 2½ acres site at Grand-drive, Raynes Park. This site was originally acquired by the Southwark Diocesan Schools' Commission for Roman Catholic primary schools, for which another site will now have to be found.

Paddington.—DWELLINGS.—J. J. de Segrais (F), SADG, 8, St. Petersburgh-pl., W2, is the architect for a proposed new residential building on the site of 51-57 (odd), Lanark-rd., W.8.

Paddington. — FLATS. — Albert J. Whatling (A), 80, Hersham-rd., Walton-on-Thames, Surrey, is the architect for a block of flats which is proposed on the sites of 2, 3 and 4, Hyde Park-sq., 69, Connaught-st. and 15, Connaught-close, W2.

Paddington.—FLATS.—R. Jelinek-Karl (F), 22, Chancery-la., WC2, is the architect for a block of 10 flats at 101-103, Gloucester-terr., W2.

Uxbridge.—SCHOOL.—The Middlesex Education Com. proposes the erection of the first instalment of the Uxbridge, Hillingdon, Ryefield-ave. primary school, to provide accommodation for 320 juniors and 240 infants, with a schoolkeeper's house, at an estimated cost of £87,780. The County Architect is G. C. Stillman (F).

Westminster.—OFFICES AND FLATS.—Richardson & McLauchlan (L/L), 13, Mansfield-sq., W1, are the architects for the rebuilding of Clarendon-bldgs., Balderton-st., W1, as offices and flats.

Woolwich. — STORE. — A new three-storey furniture store for occupation by Easterns, Ltd., is proposed on a site at the corner of Powis-st. and Green's End, now occupied by shops and dwellings. The developers, who hold a lease from Ogilby Estates stipulating rebuilding by September, 1961, are Trepil Investments, Ltd., Manchester-sq., W1. The work is estimated to cost £100,000 and it is hoped to commence rebuilding by September, 1958.

(PROVINCIAL)

Alnwick.—Northumberland CC is to plan bypass 2½ miles long at Alnwick, £415,000 est.

Aylesbury.—London CC Housing Com. proposes town expansion scheme providing for 3,000 dwellings for Londoners in next 15 years and for corresponding industrial development on land in possession of BC.

Birkenhead.—Plans submitted to BC:—Residential development at Salacre-la. for J. Sligsby, The Salacres, Upton. Plans by Richard Davis, Son & Escolme, 167, Old Chester-rd., Birkenhead.—New office block at 18, Park-st. for K.W.K. (Birkenhead), Ltd.—Science teaching block at St. Anselm's College, Manor Hill, for Order of Irish Christian Brothers. A: W. & B. Ellis (F). Union Bank-bldgs., Hardshaw-st., St. Helens.—Licensed premises at Norman-st. and Bidston-ave. for Birkenhead Brewery Co., Ltd. Plans by F. H. Frost (A), The Outspan, Stephens-terr., Little Sutton.—18 houses at Meadway for E. M. Davies & Son, 64, Selbourne-st., Liverpool. — Self-service shop with flats over at 65/69, Old Chester-rd. for Birkenhead and District Co-operative Socy., Ltd. A:Richard Owens & Son (L), 3, Crosshall-st., Liverpool.—Extensions to offices at Wallasey Bridge-rd. for Mobiloil Co., Ltd., London.

Birmingham.—TC to lease site at Chester-rd. to G. Rushbrook (Smithfield), Ltd., for erection of new premises, and site at Smallbrook-st. to the Norwich Union Life Insurance Socy. for erection of shops, showrooms, offices and warehouse.

Blaydon.—Durham CC to consider site for fire station, est. to cost £16,000. County A, Durham.

Bognor Regis.—20 acre site at South Bersted is to be developed as industrial estate by Ronald Lyon Estates, Ltd., of London.

Boldon.—W. Leech (Builders), Ltd., St. James-st., Newcastle-on-Tyne, to erect eight houses at Boldon-la., Cleadon.—I. Berriman, Ltd., builders, Fence Houses, propose six houses nr. Newark-dr., Cleadon.—R. J. Edwards & Co., 18 Frederick-st., Sunderland, to build six houses at Bridle Path, East Boldon.

Brighton.—Following school building projects proposed in coming year: New technical college, £10,000; new College of Art and Crafts, £50,000; Varndean grammar sch. for boys extension and equipment, £35,000; South Woodingdean prim. sch. erection and equipment, £93,570; Westdene prim. sch. erection and equipment, £55,000. Minor school projects, £118,800.

Burnley.—BC to lease site at Trafalgar-st. to Howarth Bros., Ltd., Bank-chmbrs., Colne, for new offices.

Carlisle.—EC proposes extensions to grammar sch., Phase 1, £19,000 est.; Phase 2, £33,975 est.—TC approved scheme for two blocks of one-bedroomed flats at Henderson-rd., Currock estate; propose block of four shops with flats over at Morton estate and central shopping area; approved plans for 18 houses at Grinsdale-ave. for A. S. Nixon, Ltd.

Chesterfield.—RDC to erect 30 houses and 10 bungalows at Mickley and 19 houses, 12 flats and two bungalows at Eckington.

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Chesterfield.—BC proposes 46 houses fronting Kirkstone-rd., £70,420 est.

Colchester.—TC plans new housing estate at Greenstead. North East Essex Divisional Executive for Education proposes new sec. sch. for 900 children on this estate.

Consett.—Turner & Townsend, 2, Garden-st., Darlington, have been appointed QS by Durham CC for a proposed technical college at Consett. County A: G. R. Clayton (F), South-st., Durham.

Coventry.—Planning and Redevelopment Com. proposes block of single-storey shops at Union-st., adjoining telephone exchange, £27,300 est.

Coventry.—City A and Planning Officer (A. G. Ling (F), MTPI) to discuss proposals for development of site at northern end of Smithford-way, with Parkin (Properties), Ltd., on basis of sketch scheme submitted for 13-storey block with single-bedroom or bed-sitting-room flats on upper floors and large shop or shops on bottom two floors.

Coventry.—EC approved proposals for special schools as follows: Small school for maladjusted children nr. 'Hill Crest,' Radford-rd.; day school for ESN children on land at Sherbourne Hostel site or nr. Allesley village; sch. for PH children on site nr. Paybody Hospital, Holyhead-rd. to replace Baginton Fields sch.; residential sch. for ESN children to replace Town Thorns sch. on site at Wainbody Wood, nr. junction Stoneleigh-rd/Kenilworth-rd.

Coventry.—HC approved in principle suggested scheme of municipal housing at Wyken Hostel site and proposes that 100 houses at that site and 500 houses at other sites, proposed in 1958-59 programme, should be built by direct labour.

Coventry.—City A & Planning Officer to report as to possible sites to be offered to Eventide Homes, Ltd. for proposed 18 bungalows for aged persons.

Coventry.—Broadgate National Spiritualist Church proposes new church premises at Eagle-st. A: J. R. Sidwell (A), 27, Union-st., Coventry.

Darlington.—Old Mechanics Institute to be reconstructed as premises for Newcastle Savings Bank. A: Marshall & Tweedy (A), Blackett-st., Newcastle.

Darlington.—TC proposes sec. sch. at Banksome, and Boro' A, E. A. Tornbohm (A), AMTPI, Central-bldgs., Darlington, to prepare sketch plans.

Dronfield.—UDC approved in principle erection of new public hall and civic centre at Farwater-la.

Eastbourne.—Licensing Justices approved plans for rebuilding of Gildredge Hotel on existing site, £30,000 est.

Eccles.—TC to prepare plans for two-storey block of flats at junction Ashbourne-rd./Trafford-rd. and three-storey block of flats at junction Oxford-st./Barton-la.

Essex.—County EC recommends approval of sketch plans of following projects: Braintree College of Further Education, second instalment, £207,533; new Chadwell Herringham county jun. sch., £54,208; Harlow Hare-st./Little Parndon No. 3 county prim. sch. (instalment), £10,000; Maldon grammar sch., extensions, £57,186; Newport grammar sch., extensions, £61,920; new Rayleigh Eastwood-rd. county jun. sch., £54,208; South-East Essex county tech. sch., instalment, £206,946; Stock C of E prim. sch., instalment, £10,000; Hedingham county sec. sch., extensions, £16,600; and Buttsbury county prim. sch., extensions, £18,600.

Essex.—EC proposes school kitchen and dining-room at Braintree county high sch., £15,400, and extensions to dining hall and kitchen at Buckhurst Hill county high sch., £10,900, in 1958-59 programme.

Eston, Yorks.—South Durham Steel & Iron Co., Ltd., Middlesbrough, have submitted outline proposals to UDC for battery of 52 coke-ovens at South Bank-on-Tees.

Fleetwood.—TC proposes erection of further 77 houses at West View estate.

Gateshead.—Planning Com. is recommending TC to approve development of Ellison-st. and Jackson-st. as shopping centres.

Gateshead.—TC to consider recommendation to build shops at Heaton Lough estate, at cost of £45,000. Boro' S.

Gateshead.—Elsworth Sykes & Co. (L/A), Ruskin-chbrs., Scala-la., Hull, are A for proposed distribution depot at Hawks-rd., Gateshead, for T. Robinson, Son & Co., Ltd., egg importers, High Bridge, Newcastle-on-Tyne.

Golborne.—UDC proposes 30 bungalows at Edge Green-la.

Gosforth.—M. J. Liddell & Sons, builders, 36, Great North-rd., Newcastle-on-Tyne, have submitted to UDC outline proposals for development of land at Wansbeck-rd. by shops, lock-up garages, public-house, public garage, church and presbytery, and six houses.

Guisborough.—Appeal by A. Bailey, 143, Guisborough-rd., Marton Moor, Nunthorpe, against refusal of North Riding CC to approve proposals for licensed hotel and cinema at West End, Guisborough, has been subject of Ministry inquiry.

Haltwhistle.—Haltwhistle Co-op. Socy., Ltd., to reconstruct their fire-damaged premises at Main-st.

Hebburn.—UDC intends building 160 houses during 1958, all of which will be used for rehousing slum dwellers. Old People's houses at Campbell Park-rd. also proposed. Ccl. has own direct labour organisation. S: R. C. Bestow.

Hereford.—CC proposes industrial centre for mental defectives at junction of Rockfield-rd. and Aylestone Hill.

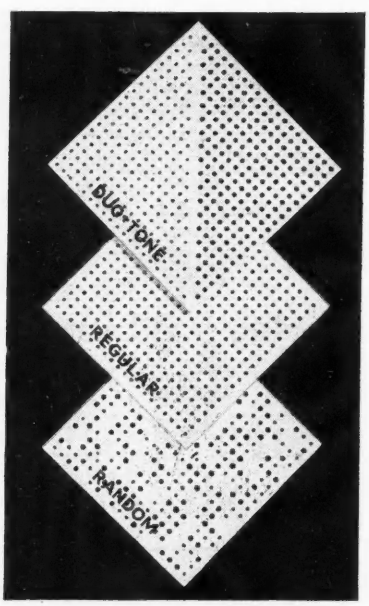
Huntingdon.—London CC Housing Com. proposes town expansion scheme to provide 1,150 dwellings, shops, schools and corresponding industrial development.

Hyde.—TC to erect 100 houses a year for slum clearance.

Jarrow.—Jarrow and Hebburn Co-op. Socy., Ltd., Albert-rd., Jarrow, to erect shop premises on Edinburgh-rd. shopping site. A: CWS Architects' Dept., 90 Westmorland-rd., Newcastle-on-Tyne.—Another extension is proposed to factory on Bede trading estate, Jarrow, for Morganite Resistors, Ltd. A: Turley & Williamson (A/A), 46 Jesmond-rd., Newcastle-on-Tyne.

Kidsgrove.—UDC to request Staffs. CC to proceed with erection of new prim. sch. at Gloucester-rd. and new College of Further Education at Harriseahead.

Liverpool.—Post-War Redevelopment Com. approved proposals for development of Jericho Farm estate by nine 11-storey blocks of 60 flats.



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Liverpool.—HC approved in principle proposals for further multi-storey blocks of flats at junction East Lancashire-rd./Lower-la.—Post-War Redevelopment Com. approved in principle proposals for nine multi-storey point blocks of dwellings in Jericho-la. area. City A and Dir. of Housing: Dr. R. Bradbury (F), AMTPI.

Longbenton, Northumberland.—Northumberland CC plans erection of RC sch. at Forest Hall.—Newcastle Corpn. to erect two blocks of three-storey flats and six bungalows for old people at Hailsham-ave.; also proposes 150 houses at Goathland-ave. City A: G. Kenyon (A), AMTPI, 18, Cloth Market, Newcastle-on-Tyne.—J. T. Bell & Sons, Market-st., Newcastle, to erect eight houses at Worcester-way.—Thomas Armstrong, Ltd., builders, 16, Robson-st., Newcastle, propose 42 houses at Longbenton.—UDC approved in principle construction of central depot at Clousden Hill. S (A. E. Sweetman) to obtain further details of precast concrete unit buildings.

Manchester.—Manchester University to build hall of residence for students containing 192 study-bedrooms in 15-storey tower block flanked by one two-storey and one three-storey block housing refectory, kitchens, etc., on site fronting Oxford-rd., between Whitworth hall and new Union building. A: J. S. Beaumont (F), of J. W. Beaumont & Sons, 51, Mosley-st., Manchester, 2.

Manchester.—TC approved revised plans for two-storey factory at Lord-st. and Elsworth-st., Cheetham, for Ernest Hathaway & Co., Ltd. A: Messrs. Peter Cummings (F), Jaceyhse., Oxford-st.—Approved erection of two-storey laboratory block with basement at Christie Hospital and Holt Radium Institute, Wilmslow-rd., Withington, for South Manchester Hospital Management Com. A: Harry S. Fairhurst & Son (F/A), 55, Brown-st., Manchester.—New public house proposed at Portway and Oatlands-rd., Woodhouse Park, for Groves & Whitnalls, Ltd. Plans by own A dept.

Manchester.—TC proposes new sec. sch. for boys and girls on site bounded by Withington-rd., Burford-rd., Burford-ave. and College-rd., Whalley Range; new prim. sch. at French Barn-la., Blackley; extensions at Ryder Brow sec. sch., Gorton.—Approved large alterations at Air Terminus, Royal Exchange, for British European Airways; public-house at Greenwood-rd. and Greenwood-rd. East, Benchill, for Joshua Tetley & Son, Ltd. (A: Drury & Gomersall (L), Roxy Cinema, Oxford-rd., Manchester); alterations to existing buildings to form effluent laboratories and filter house at Crumpsall Vale works, Blackley, for ICI, Ltd. (plans by own staff); alterations and extensions to offices at 67 Mosley-st. for Leeds Permanent Building Socy. (A: Young & Purves (F), The Crescent, Salford).

Middlesbrough.—EC has announced its intention of building county sec. sch. for 600 pupils at Prissick Farm, and prim. sch. for 280 children at Easterside. Boro' Education A: K. J. Caton (A), Education Offices, Middlesbrough.

Middlesbrough.—TC's future building programme includes branch libraries at Newport, Berwick Hills and Park End. Boro' E: J. A. Kenyon.

Morpeth.—Broomhill Industrial Co-operative Socy., Ltd., South Broomhill, to erect shop premises at Broomhill and at Hadstone estate.

Morpeth.—TC has given planning permission to W. Leech (Builders), Ltd., Clayton-st., Newcastle, to develop estate at Kirkdale for about 30 houses.

Morpeth.—Two new classrooms and dining hall to be built at St. Robert's RC sch. Oldgate, Morpeth. No contracts let.

Newcastle-on-Tyne.—Schemes being considered by City C for blocks of 12-storey flats to cost £500,000. Each block, comprising 70 units, will cost £128,000, and first is likely to be built on site of old Heaton Park-rd. sch., now being demolished. City A: G. Kenyon (A), AMTPI, 18, Cloth Market, Newcastle.—City A to prepare plans for extensions to Heaton grammar sch.

Newcastle-on-Tyne.—J. Rush & Co., Ltd., glassware merchants, Stepney Bank, Newcastle, have prepared plans for showroom and offices at Stepney Bank.—Cackett, Burns Dick & Mackellar (F/A), 21, Ellison-pl., Newcastle-on-Tyne, are A for proposed pattern store at Benfield-rd. for Donkin & Co., Ltd., and for offices at Shields-rd. for C. A. Parsons & Co., Ltd.—Marshall & Tweedy (A), 36, Blackett-st.,

Newcastle, have prepared plans for workshop, garage and store for Moores Group (Organisation), Ltd.—M. Gatoff (A), 26, Mosley-st., Newcastle, is A for warehouse and garage at Duke-st. for N. Baker.—The Minories Garages, Ltd., Jesmond-rd., Newcastle-on-Tyne, are to carry out alterations and additions to their stores and workshops and have prepared own plans. City C is being recommended to spend £10,000 on reconstruction of Cross-st. public conveniences. City A: G. Kenyon (A), AMTPI, 18, Cloth Market, Newcastle-on-Tyne.

Newcastle-on-Tyne.—TP Com. is asking City C to approve £3 million scheme for inner ring road on eastern side of city centre. City E: P. Parr.

Newcastle-on-Tyne. — Plans approved for factory at Station-rd., Walker, for R. N. Dodds & Co., Station-rd.

Northallerton.—Local War Memorial Com. has approved £32,200 scheme for swimming baths. It is proposed to carry out work in two stages. Secretary: P. Hartley, FIAC, Clerk of RDC.

North Riding.—CC to spend £64,500 on erection of home at Richmond to accommodate 50 aged and infirm people. County A: H. J. Knowles (A), County Hall, Northallerton.

North Wales.—RC Authorities propose new sec. sch. at Rhyl, £100,000 est.; new prim. sch. at Llandudno, £40,000 est.; new prim. sch. at St. Asaph, £10,000 est.

Oldbury.—BC to seek powers to build 150 houses next year.

Penrith.—UDC plans erection of four old people's houses at West-la. and six at Cross-la.

Port Talbot.—Min. of Transport approved scheme for new 5¼-mile by-pass on Swansea-Cardiff road, from Groes to Baglan Brook, £2¾ million est.

Rochdale.—HC proposes 344 houses at Meadway, 297 at Kirkholt and 12 at Rooley Moor-rd. in 1958 building programme.

Ryton.—UDC seeks loan sanction for £79,850 for 66 houses at Runhead, and £14,000 for 10 old people's houses at Brettanby-gdns. and Ivy-ave., Ryton. Ccl. has own direct labour dept.

Salford.—Governors of Royal Technical College seek to borrow £796,394 for Phase II of extensions to College.

Scarborough.—G. W. Alderson (A), 4, Pavilion-terr., Scarborough, has prepared outline plans for 10 flats at Stepney-rd.

Shipley.—TC proposes 53 more houses at Coach Road estate.

South Shields.—TC has submitted to MH&LG slum clearance scheme involving another 163 families.

South Shields.—TC proposes to demolish 188 houses at High Shields and to replace them with modern dwellings. Inquiry held.

Stockport.—BC proposes new craft rooms at Reddish Vale sec. sch.

Stockton-on-Tees.—TC has approved layout plans for 34 bungalows on land adjoining Dumbarton-ave. and Dover-rd., Stockton. Boro' A: T. C. Hartley, 28, The Square.

Stokesley.—RDC proposes to extend Yarm housing estate and build on 10 more acres.

Stokesley.—RDC to build 20 houses at Stokesley, 25 at Great Ayton and eight at Nunthorpe Station. S: H. Johnson.

Sunderland.—Ministry inquiry held into TC's proposal to acquire another 175 acres of land at Town End Farm for housing purposes. Boro' A: H. C. Bishop (A), Grange-hse., Stockton-rd., Sunderland.

Sutton Coldfield.—Plans submitted to BC:—Block of three-storey flats at corner of Bakers-la. and Sutton Oak-rd. for Ashworth & Steward, Ltd.; 17 bungalows off Little Sutton-rd. for R. H. Owen, 343, Jockey-rd.

Tynemouth.—Boro' E, D. M. O'Herlihy, 16, Northumberland-sq., North Shields, to prepare further report on proposed redevelopment of Cullercoats.—William Leech (Builders), Ltd., Clayton-st., Newcastle-on-Tyne, plan erection of houses at Billy Mill-la., North Shields.—Revised plans for factory at Wallsend-rd. for Hodges Brown, Ltd., have been approved. A: J. Gibson Cowe & Son, Claremont-chmbrs., Claremont-pl., Newcastle-on-Tyne. — Tyne Gangway Co., Ltd., propose factory extension on site of Northumberland Shipyard.—A. A. Chambers, 29, Railway-terr., North Shields, has put forward proposals to TC for erection of shops and offices on vacant site at Wellington-st., North Shields.—Priory Theatre Club plans erection of theatre.

Wallsend.—TC proposes 60 dwellings and 36 garages on site between Wiltshire-gdns. and Tynemouth coast road.

Wednesbury.—TC proposes 44 houses at Winchester-rd.

Whiston.—Liverpool Corpn. seeks permission to develop 231 acres of land at Halewood for housing overspill population. Inquiry held. City A and Director of Housing, D. and R. Bradbury (F), AMTPI.

Whitchurch.—UDC proposes block of eight flats at Queensway.

Wilmslow.—Cheshire CC to erect new grammar sch.

Worcestershire.—EC approved estimate of £214,000 for first instalment of Redditch College of Further Education.

Worcester.—City C appointed Musman & Cousens (F/A), 12, Upper Berkeley-st., W1, as A for proposed grammar sch. for girls, and Holland W. Hobbiss & Ptnrs. (F/F), 36, Waterloo-st., Birmingham, as A for new permanent buildings for City of Worcester Teachers' Training College, £450,000 est.

Workington.—TC proposes houses adjoining Casson-rd.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Bedworth.—Works for UDC: Shops, flats and maisonettes, ‡Morris & Jacombs, £39,365; maisonettes and bungalows. ‡F. Hockling & Sons, Ltd., £55,192.

Birmingham.—Erection of Lea Mason C of E mixed sch., for TC. *J. R. Deacon, Ltd., Lombard-st., Lichfield. £165,895.

Blackpool.—167 dwellings at Grange Park estate extensions, for TC. *R. Field & Son (Builders), Ltd., Stanhope-rd. Works, Blackpool. £171,054.

Cumberland.—New sec. sch. at Salterbeck, for CC. County A: J. H. Haughan (F), Portland-sq., Carlisle. *John Laing & Sons, Dalston-rd., Carlisle.

Folkestone.—Block of 12 flats at Harbour Way, for TC: *Stretton Bros. (Contractors), Ltd., £17,998 (subject to approval of MH&LG).

Gipping.—28 dwellings and site works at Needham Market, for RDC. S: J. Black, Council Offices, Needham Market, Suffolk: *O. Seaman & Son, Stowmarket, Suffolk, £43,560 (subject to MH&LG approval).

Huddersfield.—New fire station, for TC. *J. B. Brooke & Sons, Ltd., 264-274, Manchester-rd., Huddersfield.

Lancaster.—139 houses and 16 aged persons' bungalows at Ridge estate for City C. *George Wimpey & Co., Ltd., London, £249,354.

Leigh.—New RC sec. sch., for RC Diocese. *J. Gerrard & Sons, Ltd., Swinton, nr. Manchester.

Liverpool.—Large new shop and office building at Church-st., for GUS, Ltd. *Tersons, Ltd., London.

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¶London (Air Ministry). — New works contracts to value of £500 or over for week ended December 6:—

Civil engineering: Cranwell, Lincs., Constable Hart & Co., Ltd., 15, St. James-chmbrs., St. James-st., Derby. *Building work*: Halton, Bucks., H. J. & A. Wright, Ltd., High-st., Great Missenden, Bucks. *Painting work*: Pucklechurch, Som., C. A. Hayes & Sons (Painting), Ltd., Stork-hse., Hotwells, Bristol, 8; Abingdon and Grove, Berks., Colerne, Wilts. and Chivenor, Devon, (3 contrs.), Ian Williams & Co., Ltd., Wroughton-pl., Ely, Cardiff; Church Fenton, Yorks., Joseph V. Dowling, 27, St. Anns-rd., Rotherham, Yorks.; Elmdon, Warwicks, Spraycraft Co., Ltd., 61, Widmore-rd., Bromley, Kent; Thorney Island, etc., Hampshire and Selsey, Sussex, Yeomans & Ptnrs., Ltd., 42-44, Upper Berkeley-st., NW1. *Roofing work*: Topcliffe and Leconfield, The Rock Asphalte Co., Ltd., 7/9, The Broadway, Hammersmith, W6.

¶London (British Transport Commission).—British Transport Waterways contracts:—

E. C. Jones & Sons (Brentford), Ltd., Brentford, one bantam pusher tug with 30 h.p. Parson's 'Peregrine' air-cooled diesel engine.—Darenth River Aggregates, Ltd., Sunbridge, nr. Sevenoaks, one suction dredging plant for installation in existing boat.—P. Kiernan, Leeds, construction of new lockhouse at Kippax, nr. Methley.—May, Gurney & Co., Ltd., Norwich, bank protection work between Bow Locks and Old Ford, River Lee.—A. E. Farr, Ltd., Westbury, construction of new lock at Ponders End, River Lee.—Direct labour, repairs to Shropshire Union Canal at Adderley and bank protection on Weaver Navigation at Northwich.

¶London (Ministry of Works).—Contracts placed for week ended November 30:—

Cheshire: Customs and Excise, Victoria Wharf, Birkenhead, new office building, Cartwright Bros. (Little Sutton), Ltd., Little Sutton, Wirral. *Lanarkshire*: Post Office, Langside, Telephone Exchange, Ledard-rd., Glasgow, extensions and alterations, J. Crawford & Sons, Ltd., 14, Woodside-terr., Glasgow. *London*: Government Offices, Great George-st., SW1, modernisation of Zone 10, Howe & White, Ltd., 35, Manor-rd., Wallington, Surrey; builders' work, Howe & White, Ltd., 35, Manor-rd., Wallington, Surrey; internal decorations, Howe & White, Ltd., 35, Manor-rd., Wallington, Surrey; War Office, Whitehall, SW1, Zone 5, internal cleaning and painting, Architectural Decorators, Ltd., 79, Eccleston-sq., SW1; Joint Office Building, Baynards-hse., Chepstow-pl., W2, internal decorations, J. W. Green (Painters), Ltd., 171, Graham-rd., Wimbledon, SW19; Archway Blocks, The Admiralty, Whitehall, SW1, internal decorations, Sykes & Son, Ltd., 8, Essex-st., Strand, WC2; G.P.O. Headquarters Building (North), St. Martins-le-Grand, EC1, repainting cornices, etc., Clemens Bros., Ltd., 77, Derby-rd., Forest Gate, E7. *Morayshire*: Woodside-av., Grantown-on-Spey, erection of Post Office workshop, J. McLeod & Son, The Beachan, Grantown-on-Spey. *Yorkshire*: Probate Registry, Wakefield, new strongroom, first floor extension, W. G. Birch (Harrogate), Ltd., Teall-st., Wakefield.

¶London (War Dept).—Works contracts placed for week ended November 29:—*Flintshire*: Painting and decorating, Thomas E. Talbot, Stoke-on-Trent. *Gloucestershire*: Painting and decorating, Ian Williams & Co., Ltd., Cardiff. *Hampshire*: Roadwork, Anglo-American Asphalt Co., Ltd., London; miscellaneous, Henry Jones & Son (Portsmouth), Ltd., Southsea. *Middlesex*: Building, Circle Construction Co., Ltd., Wembley. *Kent*: Building, George Stone (Folkestone), Ltd., Folkestone. *Northumberland*: Miscellaneous, T. Muckle & Son, Rothbury. *Staffordshire*: Building, G. Minshall & Co., Ltd., Stoke-on-Trent.

Manchester.—New premises for domestic and Trades College, for TC. *J. Gerrard & Sons, Ltd., Swinton, nr. Manchester.—Stage 2 of new stores block at Dr. Garrett Memorial Home. *T. Alun Hughes, Ltd., Colwyn Bay.

Nottingham.—49 flats and 5 garages at Montford-st., Moorgate-st., for TC. *Bosworth & Co. (Contractors), Ltd., Quorn-rd., Nottingham.—Modification of Welbeck prim. sch., for TC. *R. Hustwayte, 37 Haydn-rd., Sherwood, Nottingham. £10,867.—3 shops with maisonettes over at Waterdown-rd., Clifton estate. *Thos. Bow, Ltd., Truimp-st., Nottingham. £15,500.—3 shops with flats over at Dungannon-rd., Clifton estate. *Bosworth & Co. (Contractors), Ltd., Quorn-rd., Nottingham. £15,096.

Rochdale.—Proposed St. Joseph's RC sec. sch., Kingsway, for Salford Diocesan Trustees. A: Greenhalgh & Williams, (A), 15 Mawdsley-st., Bolton. QS: Worrall & Kelly, F/FRICS, Bolton.

§Kenyon Construction Co., Ltd., Manchester	£160,910
James Hartley & Son, Ltd.	166,067
E. Taylor & Co., Ltd.	168,892
Whitworth Whittaker & Co., Ltd. ..	170,020
H. Wimpenny & Son, Ltd.	170,033
Wm. Townson & Son, Ltd.	171,589
J. Dickinson & Co. (Bolton), Ltd. ..	171,830
James Hobson & Sons, Ltd.	172,844
Parker & Calvert, Ltd.	173,459

Scottish Special Housing Assn., Ltd.—Contracts placed October 23 to November 20, 1957. *House erection*:—Castle-ter., Cockenzie, 30 Dunedin, Ross Contractor, Raw Smithy, East Calder, fencing. Craigens, Cumnock, 66 Dunedin, Scottish Gas Board, 95 Glaisnock-st., Cumnock, gas. Niddrie Mill, Edinburgh, 210 N.F., Ross Contractors, Raw Smithy, East Calder, chain-link fencing on railway fence. Arden (Part of 6th Dev.), Glasgow, W. Reid & Sons, Ltd., 162 Glenpark-st., Glasgow, balcony and stair balustrading. Faifley (Section J), Clydebank. 136 N.F. flats, The Marley Tile Co., Cadder, Bishopbriggs, Glasgow, flooring tiles. Johnstone Castle, Johnstone, 184 Atholl. *Atholl Houses, Ltd., 29 Park-circus, Glasgow (all trades).

Sheffield.—New office block at Limestone Cottage, for Batchelors Peas, Ltd. *M. J. Gleeson (Contractors), Ltd., 822 Chesterfield-rd., Sheffield.

South Shields.—100 houses at Whiteleas estate, for TC. Boro' E: John Reid. *J. Twiname, Ltd., Cockermouth. £145,162.

Stockport.—Alterations and extensions at St. Thomas hospital, for Manchester Regional Hospital Bd. *Cooper Bros. & John Clayton, Ltd., Catherine-st., Macclesfield. £13,379.

Stourbridge.—5 shops and flats and 9 flats at Wollaston Farm estate, for TC. *Blakeway (Contractors), Ltd., Chapel-st., Cradley. £34,677.

Sunbury-on-Thames.—School. — First instalment of Sunbury-on-Thames, Shepperton, sec. sch. for Middlesex CC. County A: G. C. Stillman (F). ‡W. S. Try, Ltd., £101,219 (subject to MoE approval).

Sunderland.—Modernisation of fitting-out quay for William Doxford & Sons (Engineers), Ltd. *Brims & Co., Ltd., Pandon-bldgs., City-rd., Newcastle-on-Tyne.

Tipton.—Infant welfare centre at Birch-st., for Staffs CC. *Five Oaks Estates, Ltd., Castlecroft-la., Compton.

Wakefield.—New office and laboratory block at Mark-la., for Associated British Maltsters, Ltd. *A. Clifford Green, Ltd., Market-st., Wakefield.

Wallsend.—60 houses at Wiltshire-gdns., for TC. Boro' E: C. E. Faddy. *J. H. James, Archer-st., Wallsend (negotiated price).

Wareham and Purbeck.—Main civil engineering works for new atomic research station at Winfrith Heath, for Atomic Energy Authority. *Turriff Construction Corporation, Ltd., Budbrooke-rd., Warwick. £1,200,000.

Westminster. — New American Embassy building at Grosvenor-sq., W1. A: Eero Saarineen & Associates, Bloomfield Hills, Michigan, USA, in association with Yorke, Rosenberg & Mardall (F/F), 2 Hyde Park-pl., W2. Constg. struct. engr.: Felix J. Samuely, MICE, MIStructE, FIAS, 8 Hamilton-pl., W1. QS: Cyril Sweett & Ptnrs., 37-41 Bedford-row, WC1. *Pauling & Co., Ltd., 26 Victoria-st., SW1. £1,754,717 (*sub-contractors for excavation, foundations and r.c. framework:* Wates, Ltd., £326,620).

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